ORDER NO.PACD 991002CO

Service Manual

PACKAGED AIR CONDITIONER
HIDE AWAY TYPE

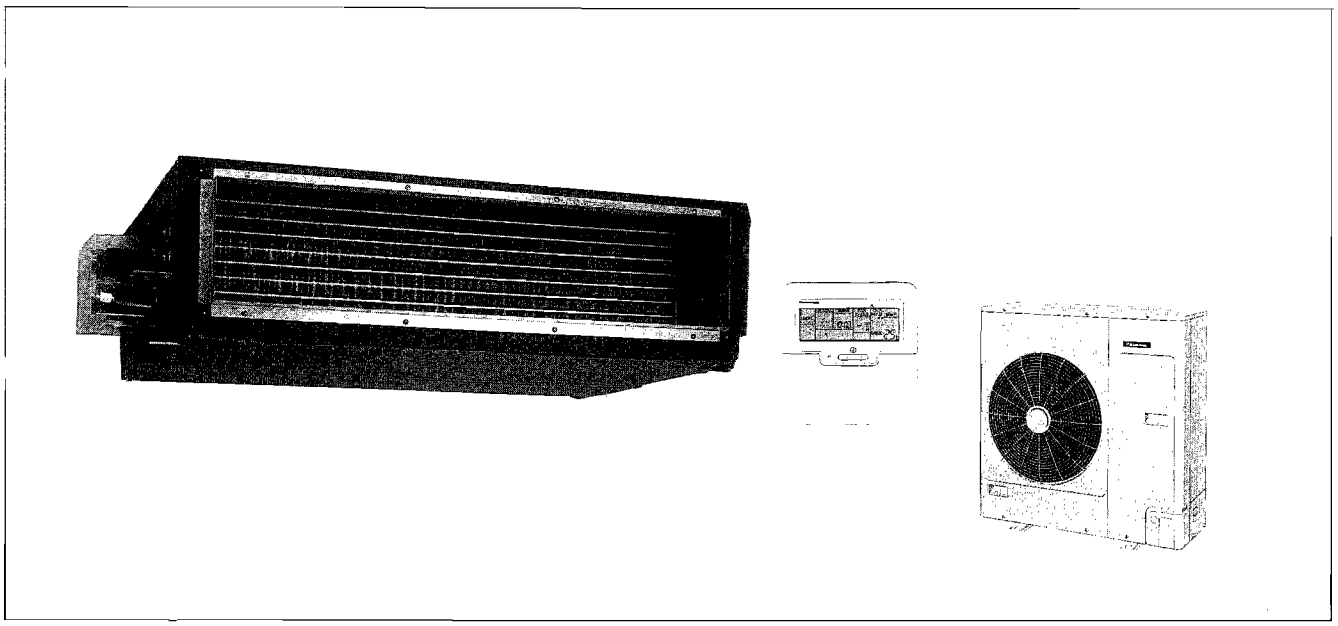
PANA -10465

■HEAT PUMP MODEL

CS-71E96JP(CU-71C52HP)
CS-71E96JP(CU-71C52XP)
CS-80E96JP(CU-80C52HP)
CS-80E96JP(CU-80C52XP)
CS-112E96JP(CU-112C52XP)
CS-140E96JP(CU-140C53XP)
CS-160E96JP(CU-160C53XP)

■COOLING ONLY MODEL

CS-71E96JP(CU-71C02HP)
CS-71E96JP(CU-71C02XP)
CS-80E96JP(CU-80C02HP)
CS-80E96JP(CU-80C02XP)
CS-112E96JP(CU-112C02XP)
CS-140E96JP(CU-140C03XP)
CS-160E96JP(CU-160C03XP)



Panasonic

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■SERVICE INFORMATION

Notice of Address setting for NEW Cassette / NEW Outdoor Unit.

The new Cassette / new Outdoor models is possible to have address setting for twin /triple control or group control by automatically when main power supply switch on.

(Manual address setting is also possible by using Dip switch on Indoor unit P.C.board.)
However, this address setting is only possible when made proper wiring connection and also Indoor unit should be original virgin unit.

[Example of trouble at test operation.]
If found out as following phenomenon at test operation on site, it may have possibility of wrong address setting.
So, please make sure the address setting.

1. LCD display of wired remote controller had not illuminate even if main power supply switch 'on'.
2. LCD display had indicated as normal illumination when power supply switch on, however outdoor unit can not have any operation.
   (But, it is necessary to take 3 to 5 minutes for outdoor unit starting from the timing of remote controller on/off switch 'on'.)
3. P.C.board had memorized wrong setting information.
   ①. If main power supply switch on with wrong connection.
   ②. when change the connection or combination of units due to re-installation etc.
      · when change the system from twin to triple(triple to twin).
      · when change the system from group control to normal one to one system.
      · when made the replacement of units as master and slave etc.

[Caution of test operation]

Do not touch the remote controller switch and also not change the any wiring for one minutes from main power supply switch 'on'.
(Because of the unit having automatic address setting during this initial one minutes.)

[Caution during automatic address setting]

When main power supply switched had took 'on', P.C.board had automatically memorized the connected system.
Consequently, when took initial power supply 'on', it will become no interchangeability of units even same type, same capacity unit.
So, it will not be able to connect the unit to other system.

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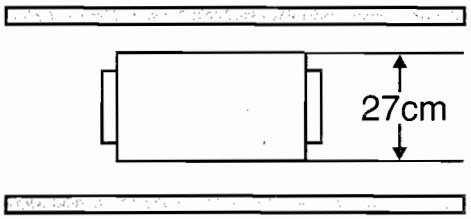
Variety of excellent features

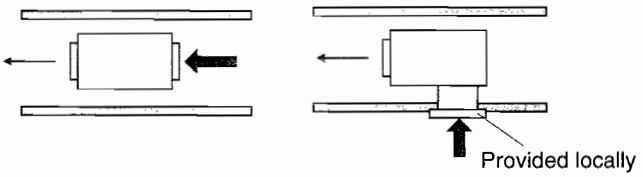
Compact design, height 27 cm

- The heght has been reduced to 27 cm (for 2.5HP to 6.0 HP), the equipment can be installed in limited spaces.

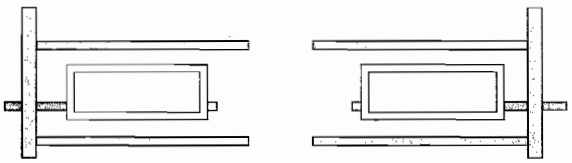


Versatile installation

- The indoor unit is designed in order that air will also enter from below, for easier installation under different conditions.

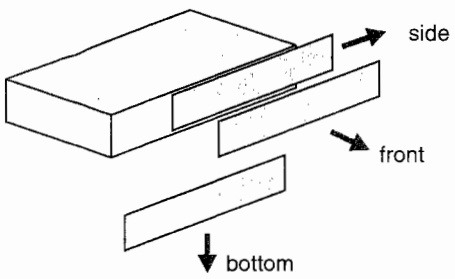


- The equipment has two drain outlets on the right and left side for adaption to the installation conditions in the building.



Easy maintenance

- Equipped with a filter as standard. The filter can be removed in three directions for easier maintenance



Static pressure selection

- The static pressure is selectable; 5mmAq or 7 mmAq. The static pressure can be selected according to the condition of the duct.

Quiet operation

- The low noise level of 40 dB (A) for 2.5 HP and 3.0 HP the models is ideal for installation in offices, shops and houses...where quiet operation is important.

Auto fan mode (indoor unit)

Auto fan mode is added to existing modes Hi, Me and Lo.
It automatically adjusts the fan speed according to the indoor temperature.

Dry mode function

Dry mode can make a comfortable indoor environment in the wet season.

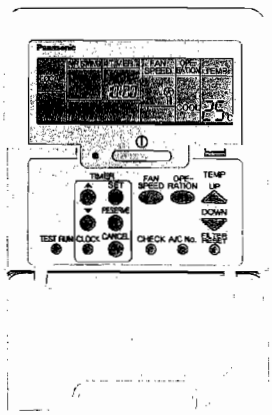
Automatic changeover function (heat pump models)

The unit automatically switches between cooling and heating in accordance with operating load in order to maintain a comfortable indoor temperature.

Common design for Indoor unit and Remote Controller.

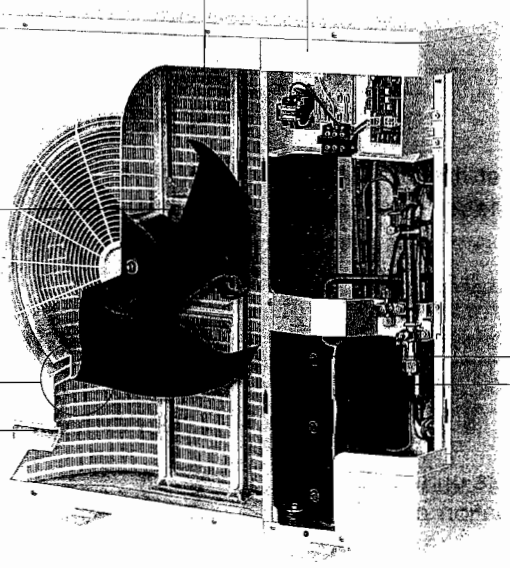
The indoor unit and the wired remote controller are designed as a common specification between Cooling only and Heat Pump models.

Wired Remote Controller



- The new design includes an easily-visible red pilot lamp. The power can be turned on and off at a single touch, without opening the cover.
- A built-in thermistor, allowing indoor temperature detection in accordance with indoor conditions by switching with main unit thermistor.
- Twin non-polar wires make installation work easy. (10 m cable supplied as accessory.)

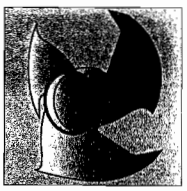
New low-noise outdoor units open up a new age - 46 dB for the 80C model!


• L-shaped design heat exchanger.
• Quiet new prop fan.
• Double-orifice ring.
<Handles>
• Handles located in a convenient position for easy carrying.
• Concave unit base also makes carrying easier.
<Servicing space>
• Front servicing method allows units to be installed side by side continuously.
• Maintenance is carried out from the front so that even side covers can be removed and installed with just 2 screws.
<Compressor>
• Additional refrigerant charging unnecessary upto 30 m.
• New sealed plates.
<Pipes>
• Pipes can be diverted outward in any of four directions (forward, right, down, back). The side cover can be disassembled so that back routing is simple.
• Non-standard refrigerant pipes with different diameters can be connected for renewal installation.

[Product features]

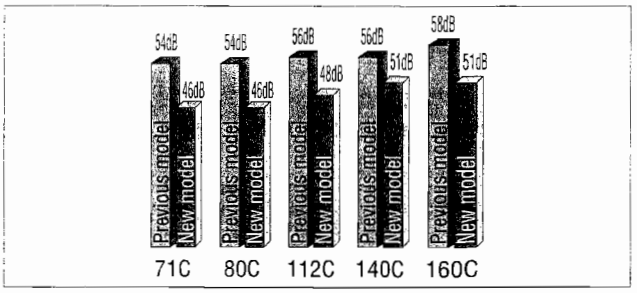
Low-noise design improves comfort in surrounding areas

All models are quieter by 5 - 8 dB (compared to current models).



(1) The noise-suppressing winglet fan is a result of new research into vane design theory. The unique curved shape suppresses the generation of vortexes, thus reducing air flow noise.
(2) The adoption of double-orifice rings reduces air passage resistance.
(3) Strengthening of the noise insulation materials in the compressor and the sealing-in of mechanical noise allows vibration noise to be greatly enclosed and suppressed.
(4) The heat exchanger has an L-shaped design to allow air to flow more smoothly.
(5) Noise is automatically reduced further during night time operation with lower outdoor air temperatures.

■Noise data (Outdoor Unit)



Automatic restart function

When the electric power comes back after a power failure, the unit itself automatically restarts the operation in the pre-failure mode.

High efficiency design

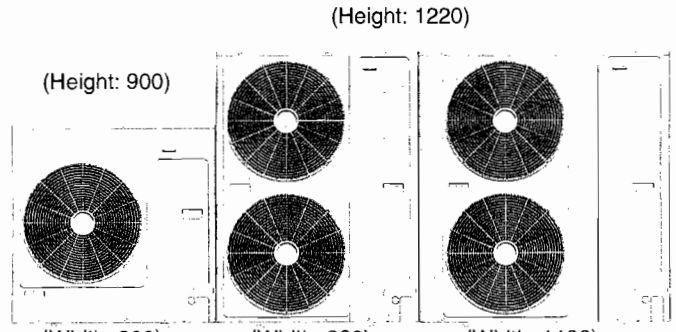
The EER had improved by 4% from previous (3HP). model

Low ambient cooling operation.

Cooling is possible to temperatures as low as −5℃.

Greatly improved workability increases system renewal capability

■Can be installed on the side continuously (Depth 320) (unit: mm)



Space saving design allows units to be installed side by side continuously

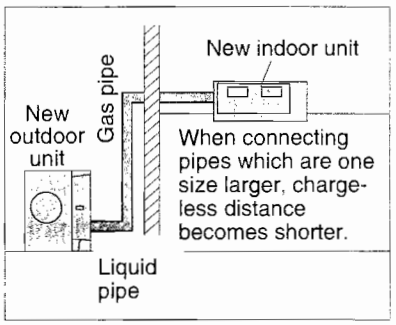
- Servicing after installation can be carried out by removing the front covers.

Easy test operation

- Test operation can be carried out for both indoor and outdoor units.

Pipes that are one size larger can also be connected for renewal.

- If renewing the system, existing refrigerant pipes can be utilized so that only the indoor and outdoor units need to be replaced.
- For example, liquid and gas pipes from 10 years ago can be connected to current pipes with the same size or one size larger. Effective utilization of materials reduces working time and trouble. (Adapter sockets are not supplied.)

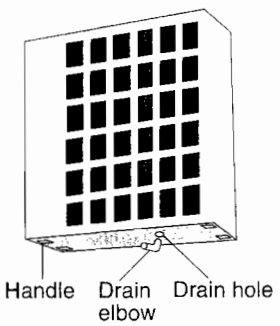

New indoor unit
Gas pipe
New outdoor unit
When connecting pipes which are one size larger, charge-less distance becomes shorter.
Liquid pipe

Additional refrigerant charging unnecessary for 30 m

- All models do not require any additional charging of refrigerant for 30 m of pipe length. This makes installation much easier.

Drain water dripping-prevention structure

- The base of the outdoor unit is provided with a single drain hole in order to prevent drain water from leaking out of the unit. By connecting a drain elbow and a discharge pipe, water leakages can be prevented even when the unit is installed against a wall.



Long pipe design

Allowable refrigerant pipe length (m)		71C~160C
Height difference/ equivalent pipe length comparison	New models	30/50
	Previous models	30/50

Internal pipe connection

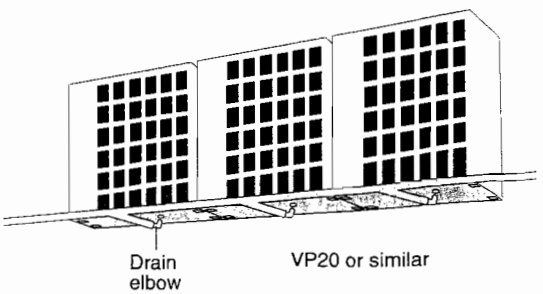
- Pipes are connected inside the units (inside the side covers), making the final appearance more attractive.
- Pipes can be diverted outward in any of four directions (forward, right, down, back).
- The liquid pipe diameters for 140C to 160C models have been made one size smaller, making installation work much easier.

■Liquid-side pipe diameters (mm)

	140C, 160C
New models	9.52
Previous models	12.7

Centralized draining method

- Even when multiple outdoor units are installed to a wall, the drain outlets can be concentrated into a single drain pipe. This makes installation easier and also improves appearance.

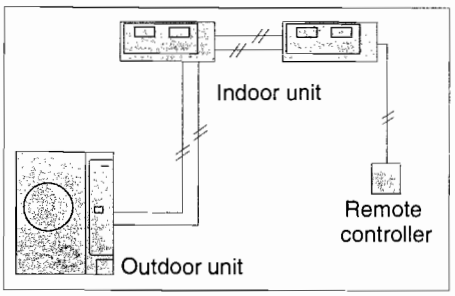


A brand-new control method using the latest in technology

Power supply wiring is also easier

Power supply wiring and other wiring tasks can also be carried out much more easily.

- Twin non-polar wires used to connect indoor and outdoor units.
- Adoption of connection error prevention circuits for drive wires and signal wires. If a connection error is made, the relay does not operate and current does not flow to the circuit boards.



Separate indoor/outdoor unit power supplies

The power supply can be connected to (1) just the outdoor units, or (2) to both the indoor and outdoor units.

Automatic setting initialization function (Remote controller and Indoor unit)

In accordance with the indoor and outdoor units connected and the connection methods, conditions such as the connection configuration (twin or triple format) and remote-control functions such as cooling only or heat pump model are automatically detected and set instantly.

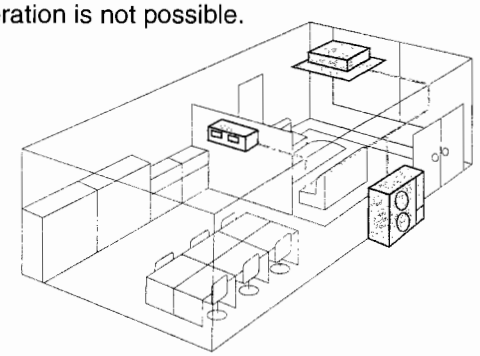
■Branch pipe kit (optional accessory)

Model No	Applicable outdoor	System
CZ-06BKDA	CU-112C, 140C, 160C	Twin
CZ-06BKTA	CU-160C	Triple

Combinations of different models and horsepowers

Twin and Triple operation

- Simultaneous air conditioning of wide spaces and corners is possible. Indoor units with different horsepowers and models can even be used in combination.
- Master units and slave-units can be set automatically in twin and triple systems. No address setting is necessary.
- Multiple indoor units can be operated simultaneously with a single remote control unit. Note that individual operation is not possible.

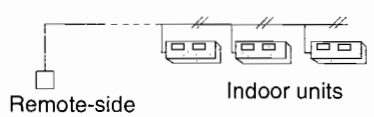
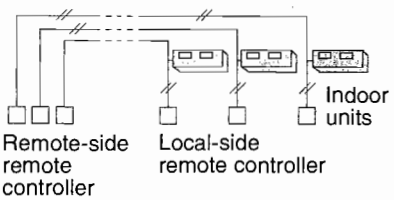


■Twin and Triple combination table (Capacity ratio)

⬭ : Outdoor unit capacity
▭ : Indoor unit capacity
(Figures indicate capacity ratios in combination.)

Outdoor unit	Simultaneous twin operation		Simultaneous triple operation	
	Standard	Horsepower difference	Standard	Horsepower difference
112C	112C: 50U 50U	112C: 40U 71E		
140C	140C: 71E 71E	140C: 50U 80E		
160C	160C: 80E 80E	160C: 50U 112E	160C: 50U 50U 50U	160C: 40U 40U 80E

GROUP CONTROL EQUIPMENT.

Wired remote controller control	**Group control by one remote controller** ●All air conditioner units are controlled as a whole by remote control. ●All indoor units operate in the same mode. ● A maximum of 16 units can be connected together (sequential starting)		**[Remote side]** ●Optional wired remote controller Parts No. · Remote controller CNR06-855930 · Wire code CNR46-938830 **[Local side]** Not needed
	Twin remote controller separate control ●Each indoor unit can be operated by either of the two remote controller. ●Apart from timer setting time, displays for two remote controller are identical. ●Last button pressed has priority (main or slave is set at remote control unit).		**[Remote side]** ●Optional wired remote controller **[Local side]** ●Optional wired remote controller Parts No. · Remote controller CNR06-855930 · Wire code CNR46-938830

2. SPECIFICATIONS (HEAT PUMP TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-71E96JP	CU-71C52HP
(1)Cooling Capacity			kW kcal/h BTU/h	6.50 5,600 22,400	
(2)Cooling Capacity			kW kcal/h BTU/h	6.70 5,800 23,200	
(3)Heating Capacity			kW kcal/h BTU/h	6.95 6,000 24,000	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 20 Me 17.5 Lo 15 Hi 706 Me 618 Lo 530	Hi 50 1766
External Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	71 156
Piping Connection	Refrigerant	Gas Liquid	mm(inch) mm(inch)	O.D ϕ 15.88(5/8)Flared type O.D ϕ 6.35(1/4)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole Single phase induction motor
		Input	kW	-	Cool/Heat 2.29/2.14
		Rated Output	kW	-	1.9
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.15	0.11
		Rated Output	kW	0.085	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(2.7) (6.0)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin Heneycomb(Washable)	-
Noise level			dB(A)	Hi 39(40) Me 36(37) Lo 33(34)	Hi 46

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

(3)Heating capacities are based on indoor temp.20°CD.B.(68.0° FD.B.)and outdoor sir temp.7°CD.B.(44.6° FD.B.)6°CW.B(42.8° FD.B.)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-71E96JP,CU-71C52HP Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Power Consumption	kW	Cool	2.55	2.55	2.55
		Heat	2.40	2.40	2.40
Running Current	A	Cool	12.6	12.1	11.6
		Heat	12.1	11.6	11.1
Starting Current	A		60		
Power Factor	%	Cool	92.0	91.6	91.6
		Heat	90.2	90.0	90.1
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,1～220V,230V,240V 50Hz		

2. SPECIFICATIONS (HEAT PUMP TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-71E96JP	CU-71C52XP
(1)Cooling Capacity			kW kcal/h BTU/h	6.50 5,600 22,400	
(2)Cooling Capacity			kW kcal/h BTU/h	6.70 5,800 23,200	
(3)Heating Capacity			kW kcal/h BTU/h	6.95 6,000 24,000	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 20 Me 17.5 Lo 15 Hi 706 Me 618 Lo 530	Hi 50 1766
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	71 156
Piping Connection	Refrigerant	Gas	mm(inch)	O.D ϕ 15.88(5/8)Flared type	
		Liquid	mm(inch)	O.D ϕ 6.35(1/4)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3-phase induction motor
		Input	kW	-	Cool/Heat 2.29/2.14
		Rated Output	kW	-	1.9
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.15	0.11
		Rated Output	kW	0.085	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(2.7) (6.0)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater Drain over-flow switch, High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin Heneycomb(Washable)	-
Noise level			dB(A)	Hi 39(40) Me 36(37) Lo 33(34)	Hi 46

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

(3)Heating capacities are based on indoor temp.20°CD.B.(68.0° FD.B.)and outdoor sir temp.7°CD.B.(44.6° FD.B.)6°CW.B(42.8° FD.B.)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS71E96JP,CU-71C52XP Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	2.55	2.55	2.55
		Heat	2.40	2.40	2.40
Running Current	A	Cool	4.7	4.5	4.3
		Heat	4.3	4.2	4.1
Starting Current	A		26		
Power Factor	%	Cool	82.4	81.8	82.5
		Heat	84.8	82.5	81.4

*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.

Panasonic	Power source	AC,3N~380V,400V,415V 50Hz

2. SPECIFICATIONS (HEAT PUMP TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-80E96JP	CU-80C52HP
(1)Cooling Capacity			kW kcal/h BTU/h	7.30 6,300 25,200	
(2)Cooling Capacity			kW kcal/h BTU/h	7.60 6,550 26,200	
(3)Heating Capacity			kW kcal/h BTU/h	7.75 6,700 26,800	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 25 Me 22 Lo 19 Hi 883 Me 777 Lo 671	Hi 50 1766
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	73 161
Piping Connection	Refrigerant	Gas	mm(inch)	O.D ϕ 15.88(5/8)Flared type	
		Liquid	mm(inch)	O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole Single phase induction motor
		Input	kW	-	Cool/Heat 2.40/2.17
		Rated Output	kW	-	2.0
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(3.8) (8.4)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 40(41) Me 37(38) Lo 34(35)	Hi 46

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

(3)Heating capacities are based on indoor temp.20°CD.B.(68.0° FD.B.)and outdoor sir temp.7°CD.B.(44.6° FD.B.)6°CW.B(42.8° FD.B.)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-80E96JP,CU-80C52HP Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Power Consumption	kW	Cool	2.70	2.70	2.70
		Heat	2.47	2.47	2.47
Running Current	A	Cool	13.2	12.7	12.2
		Heat	12.4	11.9	11.4
Starting Current	A		56		
Power Factor	%	Cool	93.0	92.4	92.2
		Heat	90.5	90.2	90.3
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,1～220V,230V,240V 50Hz		

2. SPECIFICATIONS (HEAT PUMP TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-80E96JP	CU-80C52XP
(1)Cooling Capacity			kW kcal/h BTU/h	7.30 6,300 25,200	
(2)Cooling Capacity			kW kcal/h BTU/h	7.60 6,550 26,200	
(3)Heating Capacity			kW kcal/h BTU/h	7.75 6,700 26,800	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 25 Me 22 Lo 19 Hi 883 Me 777 Lo 671	Hi 50 1766
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	73 161
Piping Connection	Refrigerant	Gas Liquid	mm(inch) mm(inch)	O.D ϕ 15.88(5/8)Flared type O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3 phase induction motor
		Input	kW	-	Cool/Heat 2.40/2.17
		Rated Output	kW	-	2.0
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(3.8) (8.4)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 40(41) Me 37(38) Lo 34(35)	Hi 46

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

(3)Heating capacities are based on indoor temp.20°CD.B.(68.0° FD.B.)and outdoor sir temp.7°CD.B.(44.6° FD.B.)6°CW.B(42.8° FD.B.)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-80E96JP,CU-80C52XP Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	2.70	2.70	2.70
		Heat	2.47	2.47	2.47
Running Current	A	Cool	4.9	4.8	4.7
		Heat	4.5	4.4	4.3
Starting Current	A		26		
Power Factor	%	Cool	83.7	81.2	79.9
		Heat	83.4	81.0	79.9
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N～380V,400V,415V 50Hz		

2. SPECIFICATIONS (HEAT PUMP TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-112E96JP	CU-112C52XP
(1)Cooling Capacity			kW kcal/h BTU/h	10.45 9,000 36,000	
(2)Cooling Capacity			kW kcal/h BTU/h	10.90 9,400 37,600	
(3)Heating Capacity			kW kcal/h BTU/h	11.15 9,600 38,400	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 35 Me 30 Lo 20 1236 1059 883	Hi 75 2647
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1500+100)×650 10-5/8×(58-7/16+3-15/16)×25-19/32	1220×900×320 48-1/32×35-7/16×12-19/32
Net Weight			kg lbs	54 119	98 216
Piping Connection	Refrigerant	Gas	mm(inch)	O.D ϕ 19.05(3/4)Flared type	
		Liquid	mm(inch)	O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Scroll),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3 phase induction motor
		Input	kW	-	Cool/Heat 3.16/2.98
		Rated Output	kW	-	2.8
Fan	Type,number of set			Sirocco fan-3	Prop fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.22	0.11×2
		Rated Output	kW	0.15	0.05×2
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	SONTEX 200LT(1.24)
Refigerant(Cherged)			kg lbs	-	R-22(4.7) (10.4)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 42(43) Me 40(41) Lo 37(38)	Hi 48

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

(3)Heating capacities are based on indoor temp.20°CD.B.(68.0° FD.B.)and outdoor sir temp.7°CD.B.(44.6° FD.B.)6°CW.B(42.8° FD.B.)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-112E96JP,CU-112C52XP Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	3.60	3.60	3.60
		Heat	3.42	3.42	3.42
Running Current	A	Cool	6.50	6.30	6.10
		Heat	6.30	6.10	5.90
Starting Current	A		48		
Power Factor	%	Cool	84.2	82.5	82.1
		Heat	82.5	80.9	80.6
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N~380V,400V,415V 50Hz		

2. SPECIFICATIONS (HEAT PUMP TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-140E96JP	CU-140C53XP
(1)Cooling Capacity			kW kcal/h BTU/h	13.00 11,200 44,800	
(2)Cooling Capacity			kW kcal/h BTU/h	13.40 11,550 46,200	
(3)Heating Capacity			kW kcal/h BTU/h	14.15 12,200 48,800	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 40 Me 35 Lo 30 1412 1236 1059	Hi 80 2825
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1500+100)×650 10-5/8×(58-7/16+3-15/16)×25-19/32	1220×1100×320 48-1/32×43-5/16×12-19/32
Net Weight			kg lbs	55 121	113 249
Piping Connection	Refrigerant	Gas	mm(inch)	O.D ϕ 19.05(3/4)Flared type	
		Liquid	mm(inch)	O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Scroll),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3-phase induction motor
		Input	kW	-	Cool/Heat 4.37/4.17
		Rated Output	kW	-	3.75
Fan	Type,number of set			Sirocco fan-4	Prop fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.26	0.11×2
		Rated Output	kW	0.20	0.05×2
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	SUNISO 4GDI(1.8)
Refigerant(Cherged)			kg lbs	-	R-22(5.7) (12.6)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 43(44) Me 41(42) Lo 39(40)	Hi 49

(1)Cooling capacities are based on temp.27°CD.B.(80.6°FD.B.),19.0°CW.B.(66.2°FW.B.)and outdoor air temp. 35°CD.B.(95°FD.B.),24°CW.B.(75.2°FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6°FD.B.),19.0°CW.B.(66.2°FW.B.)and outdoor air temp. 32°CD.B.(89.5°FD.B.),24°CW.B.(75.2°FW.B..)

(3)Heating capacities are based on indoor temp.20°CD.B.(68.0°FD.B.)and outdoor sir temp.7°CD.B.(44.6°FD.B.)6°CW.B(42.8°FD.B.)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-140E96JP,CU-140C53XP Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	4.85	4.85	4.85
		Heat	4.65	4.65	4.65
Running Current	A	Cool	8.90	8.70	8.50
		Heat	8.70	8.50	8.30
Starting Current	A		62		
Power Factor	%	Cool	82.8	80.5	79.4
		Heat	81.2	79.0	77.9

*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.

Panasonic	Power source	AC,3N～380V,400V,415V 50Hz

2. SPECIFICATIONS (HEAT PUMP TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-160E96JP	CU-160C53XP
(1)Cooling Capacity			kW kcal/h BTU/h	14.50 12,500 50,000	
(2)Cooling Capacity			kW kcal/h BTU/h	15.10 13,000 52,000	
(3)Heating Capacity			kW kcal/h BTU/h	15.70 13,500 54,000	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 45 Me 40 Lo 35 1589 1412 1236	Hi 95 3355
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1500+100)×650 10-5/8×(58-7/16+3-15/16)×25-19/32	1220×1100×320 48-1/32×43-5/16×12-19/32
Net Weight			kg lbs	56 123	118 260
Piping Connection	Refrigerant	Gas Liquid	mm(inch) mm(inch)	O.D ϕ 19.05(3/4)Flared type O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Scroll),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3- phase induction motor
		Input	kW	-	Cool/Heat 4.59/4.55
		Rated Output	kW	-	4.5
Fan	Type,number of set			Sirocco fan-4	Prop fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.30	0.12×2
		Rated Output	kW	0.20	0.055×2
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	SUNISO 4GSDID(1.6)
Refigerant(Cherged)			kg lbs	-	R-22(5.4) (11.9)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 45(46) Me 42(43) Lo 39(40)	Hi 50

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

(3)Heating capacities are based on indoor temp.20°CD.B.(68.0° FD.B.)and outdoor sir temp.7°CD.B.(44.6° FD.B.)6°CW.B(42.8° FD.B.)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-160E96JP,CU-160C53XP		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	5.13	5.13	5.13
		Heat	5.09	5.09	5.09
Running Current	A	Cool	9.40	9.20	9.00
		Heat	9.20	9.00	8.80
Starting Current	A		61		
Power Factor	%	Cool	82.9	80.5	79.3
		Heat	84.1	81.6	80.5
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N~380V,400V,415V 50Hz		

3. SPECIFICATIONS(COOLING ONLY TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-71E96JP	CU-71C02HP
(1)Cooling Capacity			kW kcal/h BTU/h	6.50 5,600 22,400	
(2)Cooling Capacity			kW kcal/h BTU/h	6.70 5,800 23,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 20 Me 17.5 Lo 15 Hi 706 Me 618 Lo 530	Hi 50 1765
External Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	68 150
Piping Connection	Refrigerant	Gas Liquid	mm(inch) mm(inch)	O.D ϕ 15.88(5/8)Flared type O.D ϕ 6.35(1/4)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole Single phase induction motor
		Input	kW	-	COOL/2.29
		Rated Output	kW	-	1.9
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.15	0.11
		Rated Output	kW	0.085	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	-
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(2.7) (6.0)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin Heneycomb(Washable)	-
Noise level			dB(A)	Hi 39(40) Me 36(37) Lo 33(34)	Hi 46

(1)Cooling capacities are based on temp.27°CD.B.(80.6°FD.B.),19.0°CW.B.(66.2°FW.B.)and outdoor air temp. 35°CD.B.(95°FD.B.),24°CW.B.(75.2°FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6°FD.B.),19.0°CW.B.(66.2°FW.B.)and outdoor air temp. 32°CD.B.(89.5°FD.B.),24°CW.B.(75.2°FW.B..)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-71E96JP,CU-71C02HP Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Power Consumption	kW	Cool	2.55	2.55	2.55
Running Current	A	Cool	12.6	12.1	11.6
Starting Current	A		60		
Power Factor	%	Cool	92.0	91.6	91.6
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,1～220V,230V,240V 50Hz		

3. SPECIFICATIONS(COOLING ONLY TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-71E96JP	CU-71C02XP
(1)Cooling Capacity			kW kcal/h BTU/h	6.50 5,600 22,400	
(2)Cooling Capacity			kW kcal/h BTU/h	6.70 5,800 23,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 20 Me 17.5 Lo 15 Hi 706 Me 618 Lo 530	Hi 50 1766
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	68 150
Piping Connection	Refrigerant	Gas	mm(inch)	O.D ϕ 15.88(5/8)Flared type	
		Liquid	mm(inch)	O.D ϕ 6.35(1/4)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3-phase induction motor
		Input	kW	-	Cool/2.29
		Rated Output	kW	-	1.9
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.15	0.11
		Rated Output	kW	0.085	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	-
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(2.7) (6.0)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin Heneycomb(Washable)	-
Noise level			dB(A)	Hi 39(40) Me 36(37) Lo 33(34)	Hi 46

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS71E96JP,CU-71C02XP Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	2.55	2.55	2.55
Running Current	A	Cool	4.7	4.5	4.3
Starting Current	A		26		
Power Factor	%	Cool	82.4	81.8	82.5
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N~380V,400V,415V 50Hz		

3. SPECIFICATIONS(COOLING ONLY TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-80E96JP	CU-80C02HP
(1)Cooling Capacity			kW kcal/h BTU/h	7.30 6,300 25,200	
(2)Cooling Capacity			kW kcal/h BTU/h	7.60 6,550 26,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 25 Me 22 Lo 19 Hi 883 Me 777 Lo 671	Hi 50 1766
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	70 151
Piping Connection	Refrigerant	Gas Liquid	mm(inch) mm(inch)	O.D ϕ 15.88(5/8)Flared type O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole Single phase induction motor
		Input	kW	-	Cool/2.40
		Rated Output	kW	-	2.0
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	-
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(3.8) (8.4)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 40(41) Me 37(38) Lo 34(35)	Hi 46

(1)Cooling capacities are based on temp.27℃D.B.(80.6°F.D.B.),19.0℃W.B.(66.2°F.W.B.)and outdoor air temp. 35℃D.B.(95°F.D.B.),24℃W.B.(75.2°F.W.B.)

(2)Cooling capacities are based on temp.27℃D.B.(80.6°F.D.B.),19.0℃W.B.(66.2°F.W.B.)and outdoor air temp. 32℃D.B.(89.5°F.D.B.),24℃W.B.(75.2°F.W.B..)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-80E96JP,CU-80C02HP		
			Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Power Consumption	kW	Cool	2.70	2.70	2.70
Running Current	A	Cool	13.2	12.7	12.2
Starting Current	A		56		
Power Factor	%	Cool	93.0	92.4	92.2

*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.

Panasonic	Power source	AC,1～220V,230V,240V 50Hz

3. SPECIFICATIONS(COOLING ONLY TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-80E96JP	CU-80C02XP
(1)Cooling Capacity			kW kcal/h BTU/h	7.30 6,300 25,200	
(2)Cooling Capacity			kW kcal/h BTU/h	7.60 6,550 26,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 25 Me 22 Lo 19 Hi 883 Me 777 Lo 671	Hi 50 1766
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1000+100)×650 10-5/8×(39-3/8+3-15/16)×25-19/32	900×900×320 35-7/16×35-7/16×12-19/32
Net Weight			kg lbs	40 88	70 151
Piping Connection	Refrigerant	Gas	mm(inch)	O.D ϕ 15.88(5/8)Flared type	
		Liquid	mm(inch)	O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Rotary),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3 phase induction motor
		Input	kW	-	Cool/2.40
		Rated Output	kW	-	2.0
Fan	Type,number of set			Sirocco fan-2	Prop fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	-
Refrigeration oil(Cherged)			L	-	DIAMOND MS32(N-1)(1.3)
Refigerant(Cherged)			kg lbs	-	R-22(3.8) (8.4)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 40(41) Me 37(38) Lo 34(35)	Hi 46

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-80E96JP,CU-80C02XP		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	2.70	2.70	2.70
Running Current	A	Cool	4.9	4.8	4.7
Starting Current	A		26		
Power Factor	%	Cool	83.7	81.2	79.9
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N~380V,400V,415V 50Hz		

3. SPECIFICATIONS(COOLING ONLY TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-112E96JP	CU-112C02XP
(1)Cooling Capacity			kW kcal/h BTU/h	10.45 9,000 36,000	
(2)Cooling Capacity			kW kcal/h BTU/h	10.90 9,400 37,600	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 35 Me 30 Lo 20 1236 1059 883	Hi 75 2647
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1500+100)×650 10-5/8×(58-7/16+3-15/16)×25-19/32	1220×900×320 48-1/32×35-7/16×12-19/32
Net Weight			kg lbs	54 119	95 209
Piping Connection	Refrigerant	Gas	mm(inch)	O.D φ19.05(3/4)Flared type	
		Liquid	mm(inch)	O.D φ9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D φ20×1
Compressor	Type,number of set			-	Hermetic-1(Scroll),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3 phase induction motor
		Input	kW	-	Cool/ 3.16
		Rated Output	kW	-	2.8
Fan	Type,number of set			Sirocco fan-3	Prop fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.22	0.11×2
		Rated Output	kW	0.15	0.05×2
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	SONTEX 200LT(1.24)
Refigerant(Cherged)			kg lbs	-	R-22(4.7) (10.4)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 42(43) Me 40(41) Lo 37(38)	Hi 48

(1)Cooling capacities are based on temp.27°CD.B.(80.6°FD.B.),19.0°CW.B.(66.2°FW.B.)and outdoor air temp. 35°CD.B.(95°FD.B.),24°CW.B.(75.2°FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6°FD.B.),19.0°CW.B.(66.2°FW.B.)and outdoor air temp. 32°CD.B.(89.5°FD.B.),24°CW.B.(75.2°FW.B..)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-112E96JP,CU-112C02XP Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	3.60	3.60	3.60
Running Current	A	Cool	6.50	6.30	6.10
Starting Current	A		48		
Power Factor	%	Cool	84.2	82.5	82.1
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N~380V,400V,415V 50Hz		

3. SPECIFICATIONS(COOLING ONLY TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-140E96JP	CU-140C03XP
(1)Cooling Capacity			kW kcal/h BTU/h	13.00 11,200 44,800	
(2)Cooling Capacity			kW kcal/h BTU/h	13.40 11,550 46,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 40 Me 35 Lo 30 1412 1236 1059	Hi 80 2825
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1500+100)×650 10-5/8×(58-7/16+3-15/16)×25-19/32	1220×1100×320 48-1/32×43-5/16×12-19/32
Net Weight			kg lbs	55 121	110 242
Piping Connection	Refrigerant	Gas	mm(inch)	O.D ϕ 19.05(3/4)Flared type	
		Liquid	mm(inch)	O.D ϕ 9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D ϕ 20×1
Compressor	Type,number of set			-	Hermetic-1(Scroll),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3-phase induction motor
		Input	kW	-	Cool/4.37
		Rated Output	kW	-	3.75
Fan	Type,number of set			Sirocco fan-4	Prop fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.26	0.11×2
		Rated Output	kW	0.20	0.05×2
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	SUNISO 4GDI(1.8)
Refigerant(Cherged)			kg lbs	-	R-22(5.7) (12.6)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 43(44) Me 41(42) Lo 39(40)	Hi 49

(1)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 35°CD.B.(95° FD.B.),24°CW.B.(75.2° FW.B.)

(2)Cooling capacities are based on temp.27°CD.B.(80.6° FD.B.),19.0°CW.B.(66.2° FW.B.)and outdoor air temp. 32°CD.B.(89.5° FD.B.),24°CW.B.(75.2° FW.B..)

ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-140E96JP,CU-140C03XP		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	4.85	4.85	4.85
Running Current	A	Cool	8.90	8.70	8.50
Starting Current	A		62		
Power Factor	%	Cool	82.8	80.5	79.4
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N~380V,400V,415V 50Hz		

3. SPECIFICATIONS(COOLING ONLY TYPE)

ITEM \ MODEL				Indoor unit	Outdoor unit
			Main body	CS-160E96JP	CU-160C03XP
(1)Cooling Capacity			kW kcal/h BTU/h	14.50 12,500 50,000	
(2)Cooling Capacity			kW kcal/h BTU/h	15.10 13,000 52,000	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m^3/min cfm	Hi 45 Me 40 Lo 35 1589 1412 1236	Hi 95 3355
Outside Static Pressure			mmAq Pa	Hi 5(7) Me 4(6) Lo 3(5) Hi 49(69) Me 39(59) Lo 29(49)	-
Air Inlet				Backward Sucction	Back sided Suction
Air Outlet				Front blow-out	Front blow-out
Outside Dimension(H×W×D)			mm inch	270×(1500+100)×650 10-5/8×(58-7/16+3-15/16)×25-19/32	1220×1100×320 48-1/32×43-5/16×12-19/32
Net Weight			kg lbs	56 123	115 253
Piping Connection	Refrigerant	Gas	mm(inch)	O.D φ19.05(3/4)Flared type	
		Liquid	mm(inch)	O.D φ9.52(3/8)Flared typy	
	Drain		mm	Female screw RC1(PT1)	I.D φ20×1
Compressor	Type,number of set			-	Hermetic-1(Scroll),1
	Starting Method			-	Direct on-line starting
	Capacity Control		%	-	0,100
	Motor	Type		-	2-pole 3- phase induction motor
		Input	kW	-	Cool/4.59
		Rated Output	kW	-	4.5
Fan	Type,number of set			Sirocco fan-4	Prop fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Controllr)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phase induction motor
		Input	kW	0.30	0.12×2
		Rated Output	kW	0.20	0.055×2
Air-heat exchanger				Louver-fin typy	Louver-fin typy
Refigerant Control				Capillary tube	Capillary tube
Refrigeration oil(Cherged)			L	-	SUNISO 4GSDID(1.6)
Refigerant(Cherged)			kg lbs	-	R-22(5.4) (11.9)
Running Adjustment	Control Switch			Wired Remote Controller	-
	Room Temperature			Thermostat(Main Body)	-
Anti-vibration and Anti-sound Materials				Cabinet(urethane foam attached)	Compressor(Anti-vibration rubber)
Safety Devices				Internal protector for compresser,Internal thermostat for F.M, Crankcase heater High pressure switch,Current Trans	
External Finish				Galvanized steel plate	Powder coating
Air Filter(Factory set)				Polypropylene regin heneycomb(Washable)	-
Noise level			dB(A)	Hi 45(46) Me 42(43) Lo 39(40)	Hi 50

(1)Cooling capacities are based on temp.27℃D.B.(80.6°F D.B.),19.0℃W.B.(66.2°F W.B.)and outdoor air temp. 35℃D.B.(95°F D.B.),24℃W.B.(75.2°F W.B.)

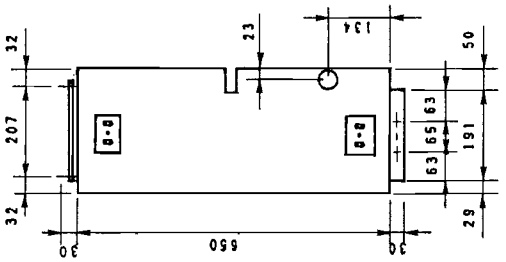
(2)Cooling capacities are based on temp.27℃D.B.(80.6°F D.B.),19.0℃W.B.(66.2°F W.B.)and outdoor air temp. 32℃D.B.(89.5°F D.B.),24℃W.B.(75.2°F W.B..)

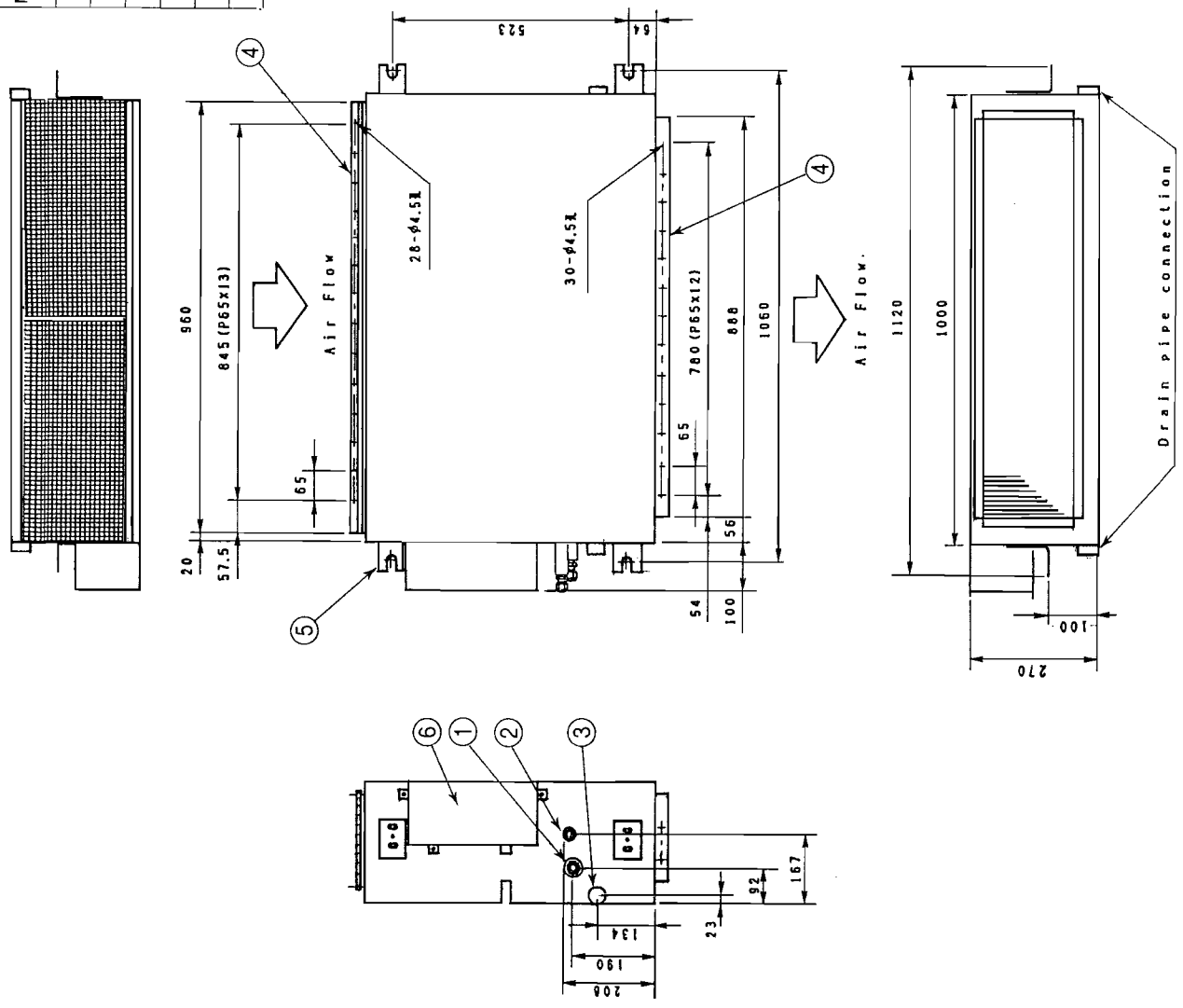
ELECTRICAL DATA(50Hz)

ITEM \ MODEL			CS-160E96JP,CU-160C03XP		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	5.13	5.13	5.13
Running Current	A	Cool	9.40	9.20	9.00
Starting Current	A		61		
Power Factor	%	Cool	82.9	80.5	79.3
*Power Factor means total figure of compressor,indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC,3N～380V,400V,415V 50Hz		

CS-71E96JP,CS-80E96JP
OUTSIDE DIMENSIONS

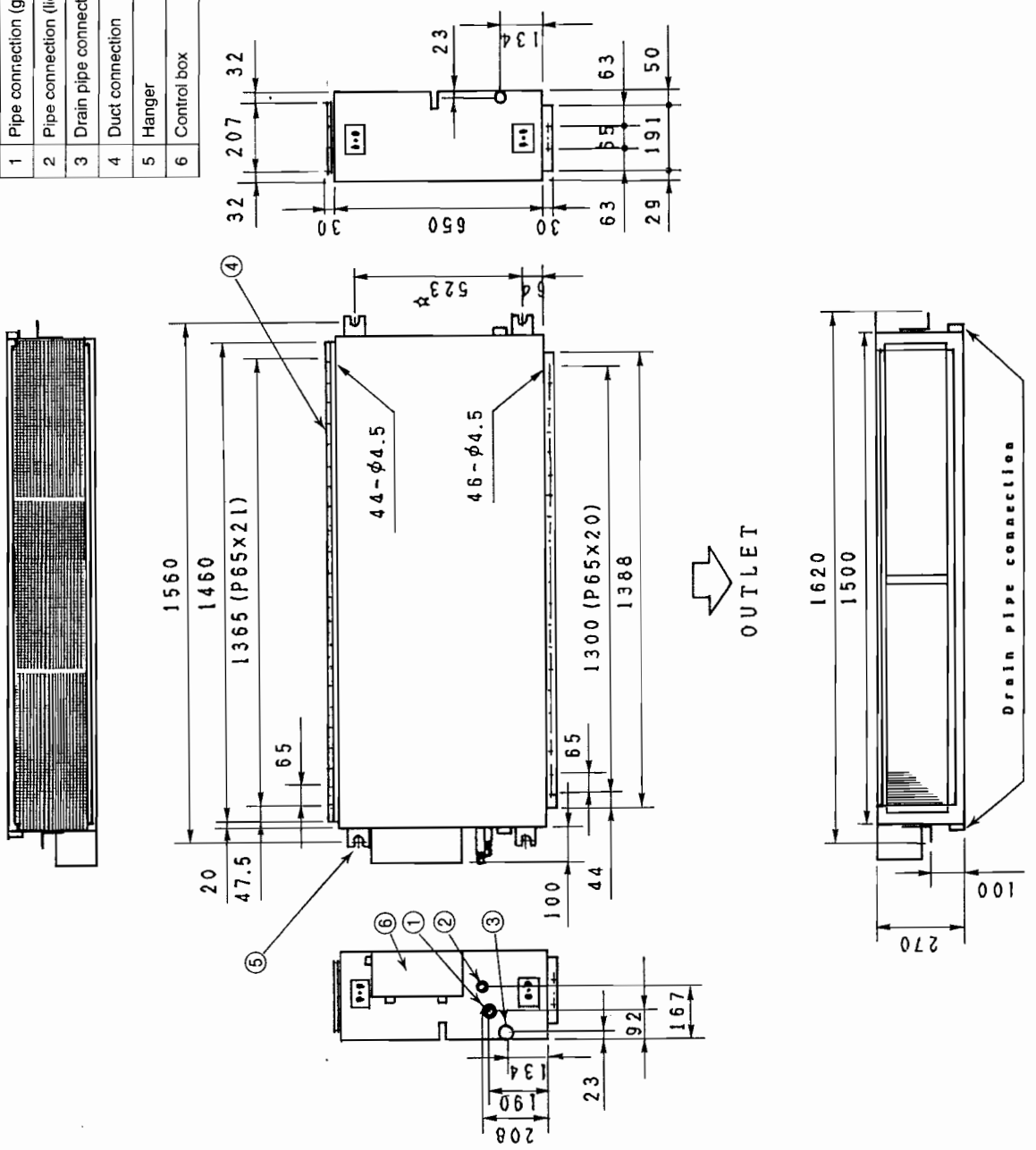
No.	NAME	QTY	NOTE	
			CS-71E96JP	CS-80E96J
1	Pipe connection (gas)	1	O.D. ϕ 15.88 Flared	O.D.É"15.88 Flared
2	Pipe connection (liquid)	1	O.D. ϕ 6.35 Flared	O.D.É"9.52 Flared
3	Drain pipe connection	2	Female screw PTI	Female screw PTI
4	Duct connection	2		
5	Hanger	4		
6	Control box	1		





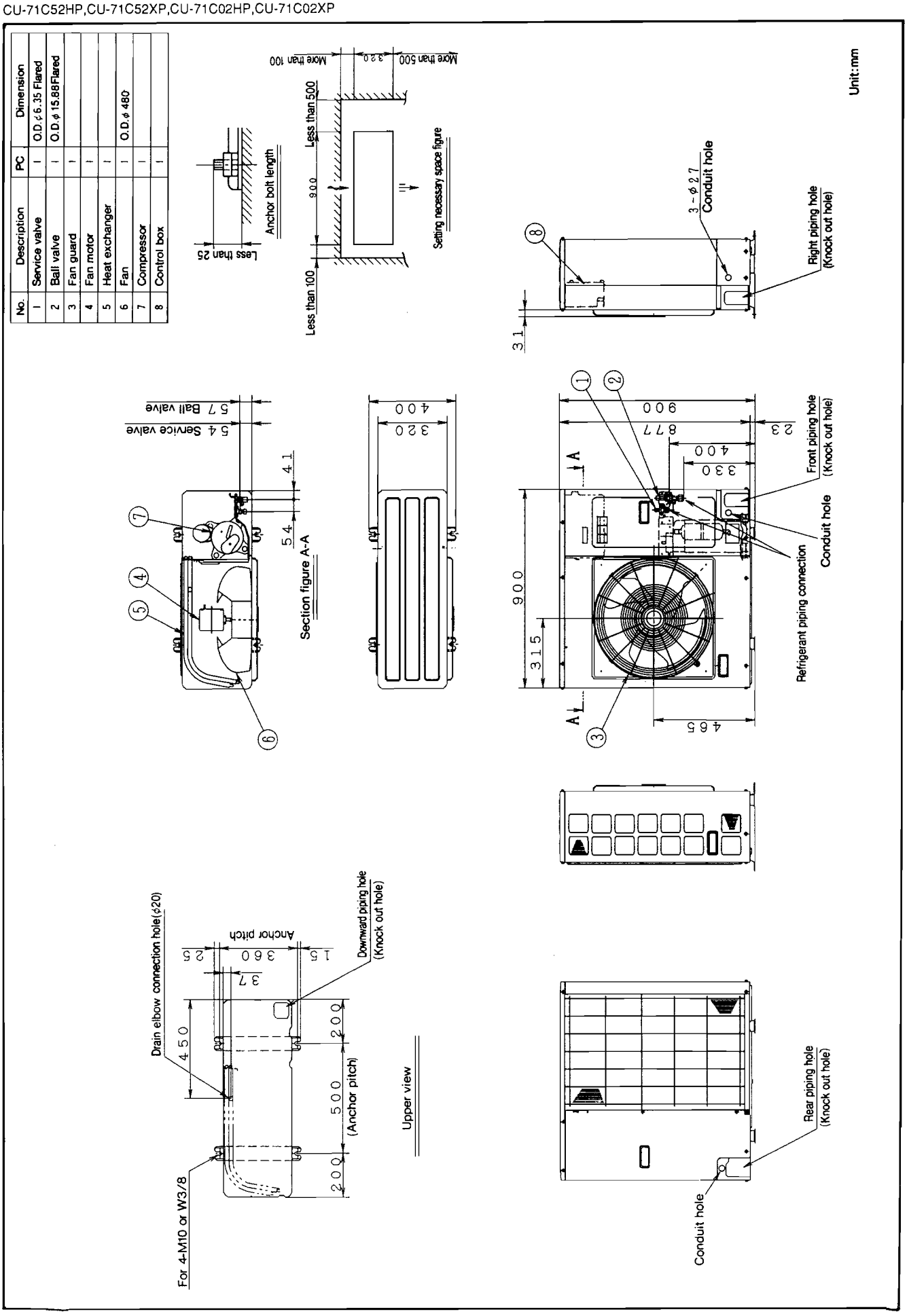
CS-112E96JP,CS-140E96JP,CS-160E96JP
OUTSIDE DIMENSIONS

No.	NAME	QTY	NOTE
1	Pipe connection (gas)	1	O.D. ϕ 19.05 Flared
2	Pipe connection (liquid)	1	O.D. ϕ 9.52 Flared
3	Drain pipe connection	2	Female screw PTI
4	Duct connection	2	
5	Hanger	4	
6	Control box	1	



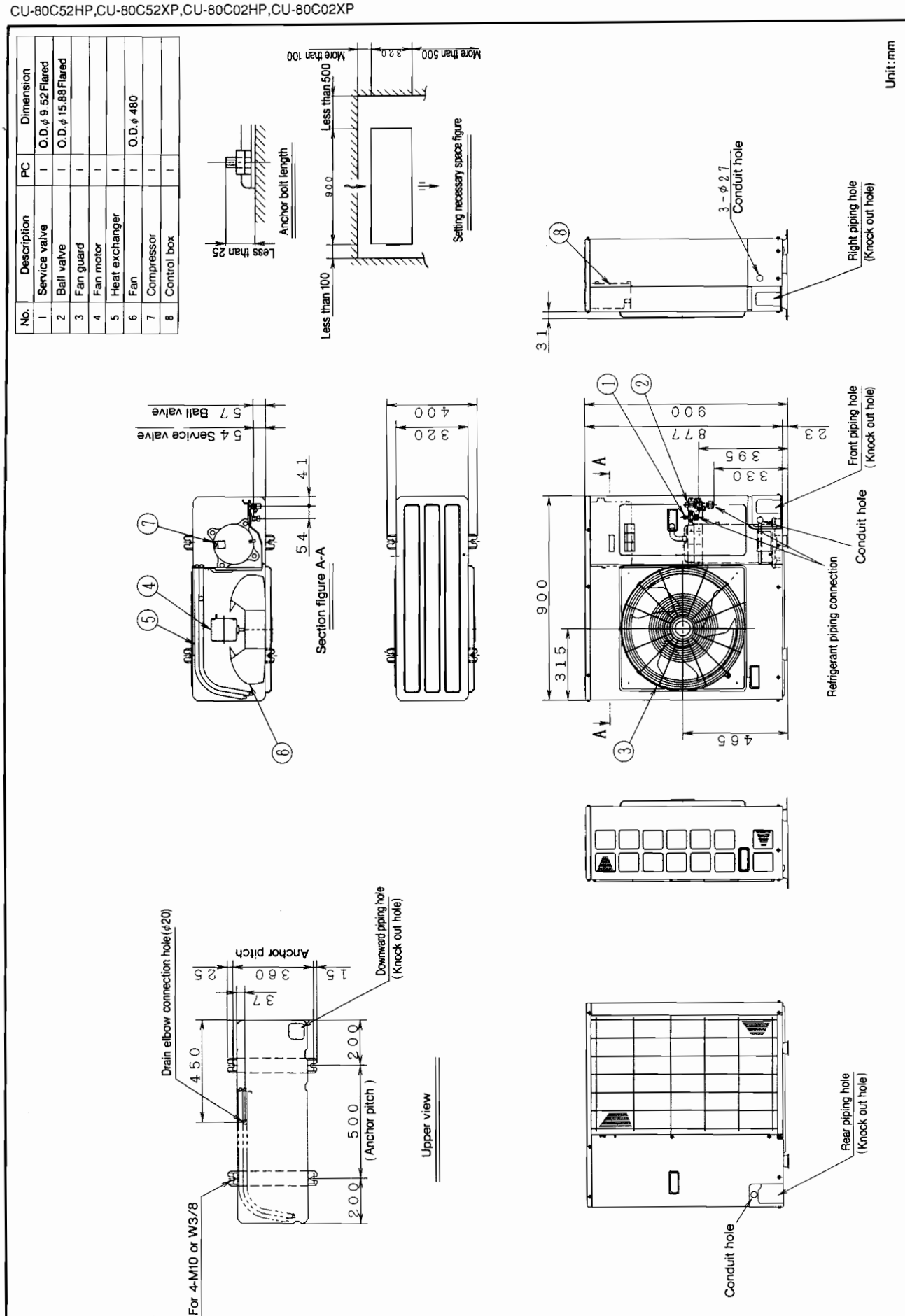
CU-71C52HP,CU-71C52XP,CU-71C02HP,CU-71C02XP

No.	Description	PC	Dimension
1	Service valve	1	O.D.φ6.35 Flared
2	Ball valve	1	O.D.φ15.88Flared
3	Fan guard	1	
4	Fan motor	1	
5	Heat exchanger	1	
6	Fan	1	O.D.φ480
7	Compressor	1	
8	Control box	1	

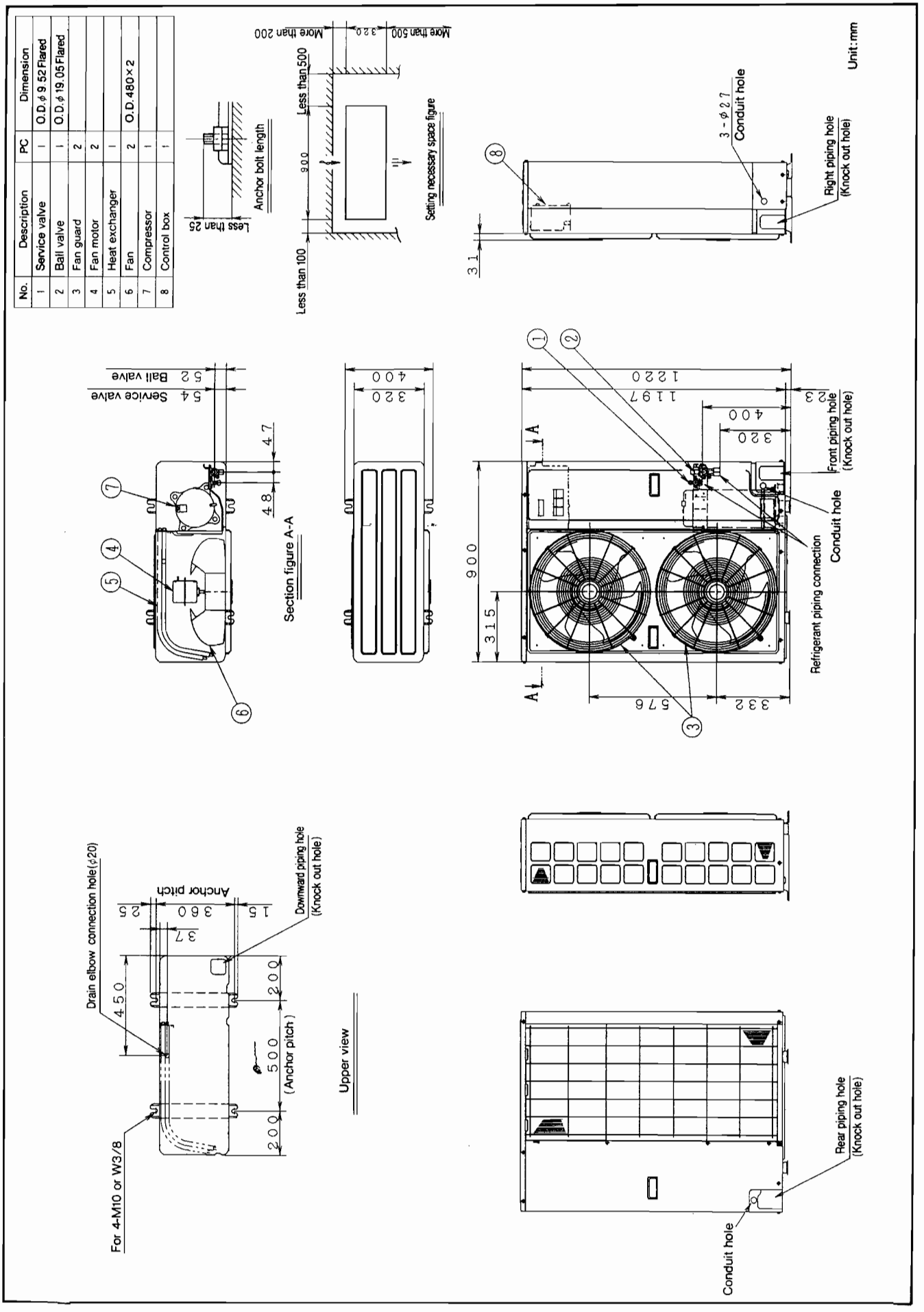


CU-80C52HP,CU-80C52XP,CU-80C02HP,CU-80C02XP

No.	Description	PC	Dimension
1	Service valve	1	O.D.ϕ 9.52Flared
2	Ball valve	1	O.D.ϕ 15.88Flared
3	Fan guard	1	
4	Fan motor	1	
5	Heat exchanger	1	
6	Fan	1	O.D.ϕ 480
7	Compressor	1	
8	Control box	1	

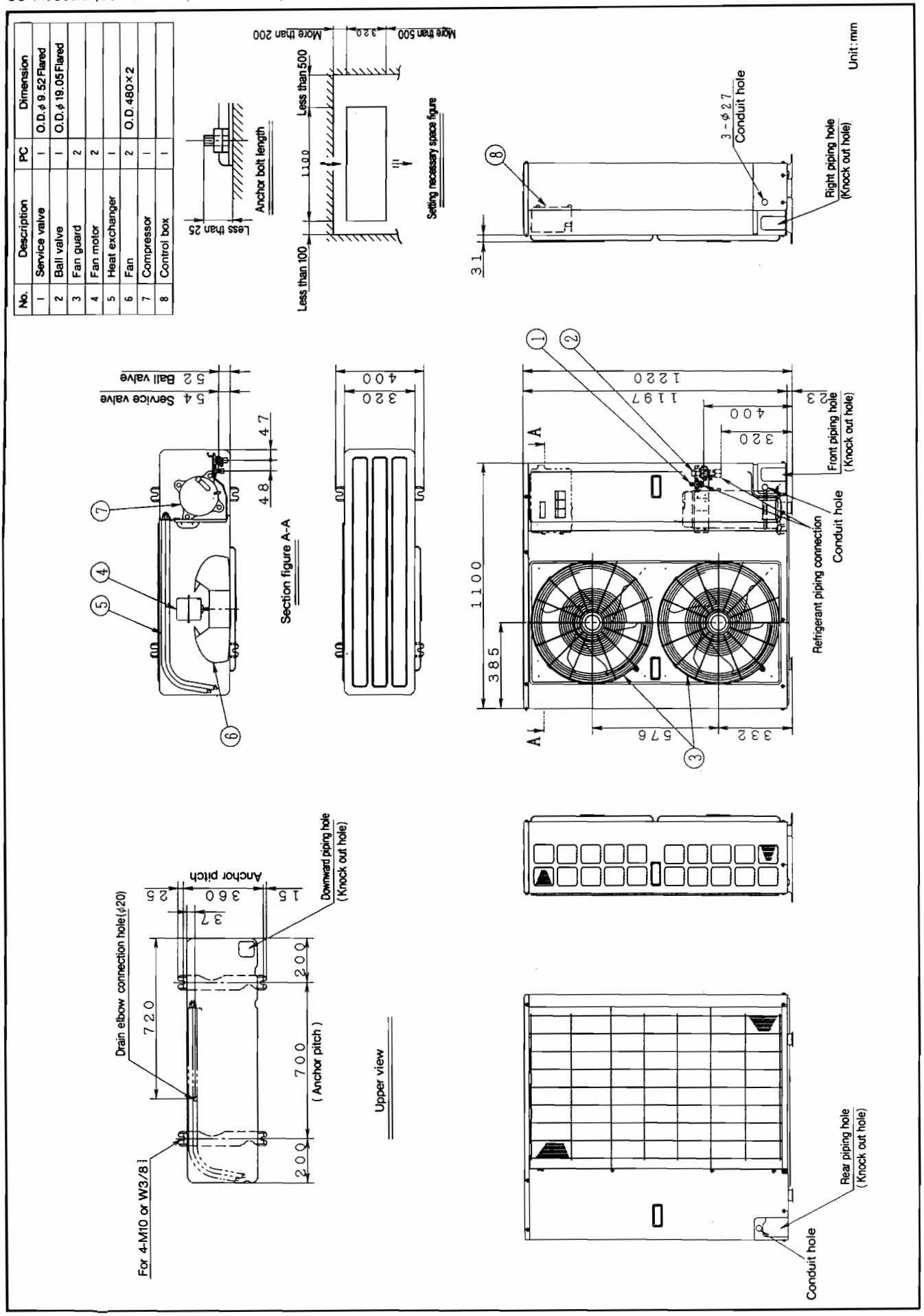


CU-112C52XP,CU-112C02XP



No.	Description	PC	Dimension
1	Service valve	1	O.D.ϕ 9.52 Flared
2	Ball valve	1	O.D.ϕ 19.05 Flared
3	Fan guard	2	
4	Fan motor	2	
5	Heat exchanger	1	
6	Fan	2	O.D.480×2
7	Compressor	1	
8	Control box	1	

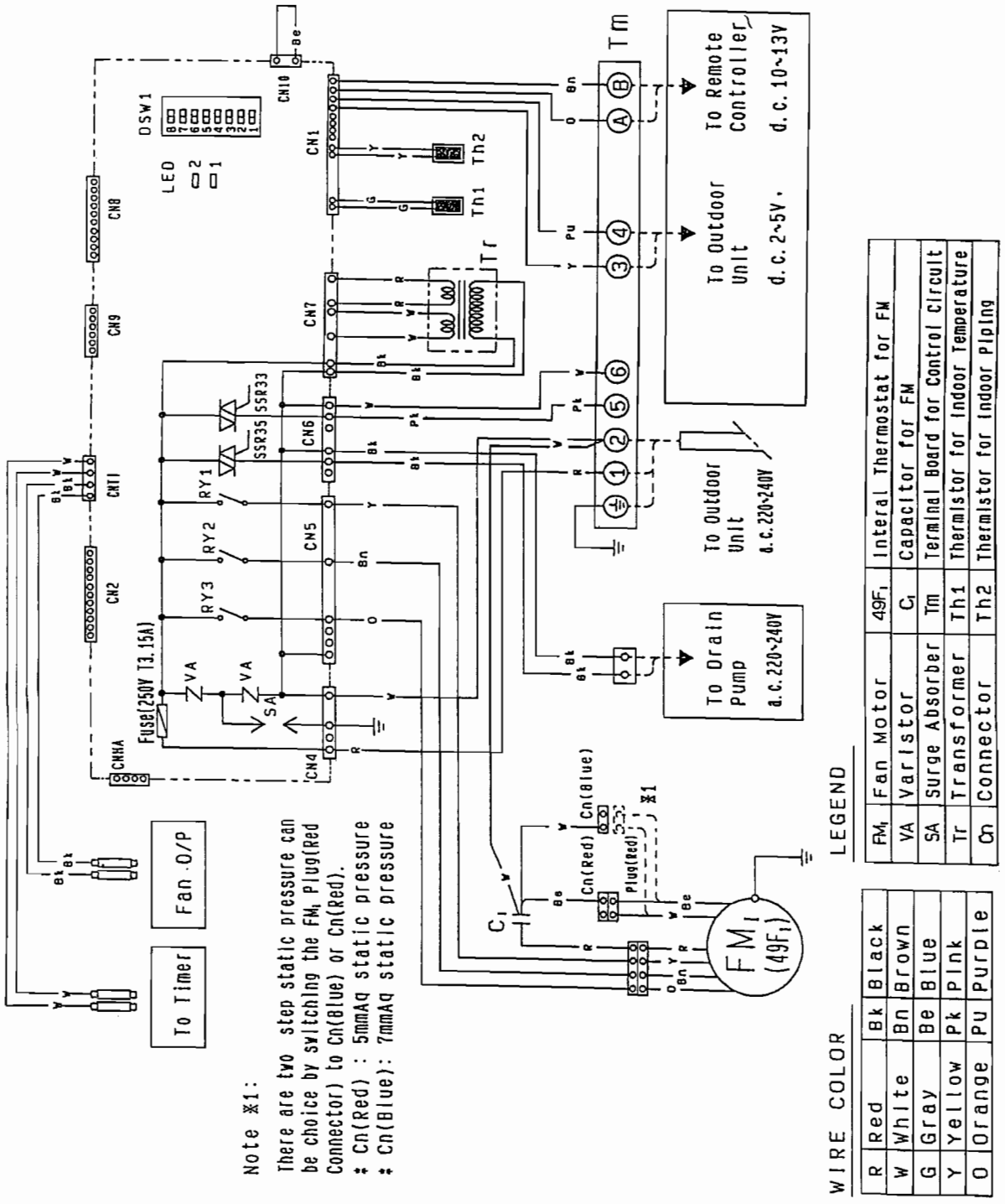
CU-140C53XP,CU-160C53XP,CU-140C03XP,CU-160C03XP



No.	Description	PC	Dimension
1	Service valve	1	O.D.φ9.52 Flared
2	Ball valve	1	O.D.φ19.05 Flared
3	Fan guard	2	
4	Fan motor	2	
5	Heat exchanger	1	
6	Fan	2	O.D.480×2
7	Compressor	1	
8	Control box	1	

CS-71E96JP,CS-80E96JP

CONNECTION DIAGRAM (Indoor Unit)



LEGEND

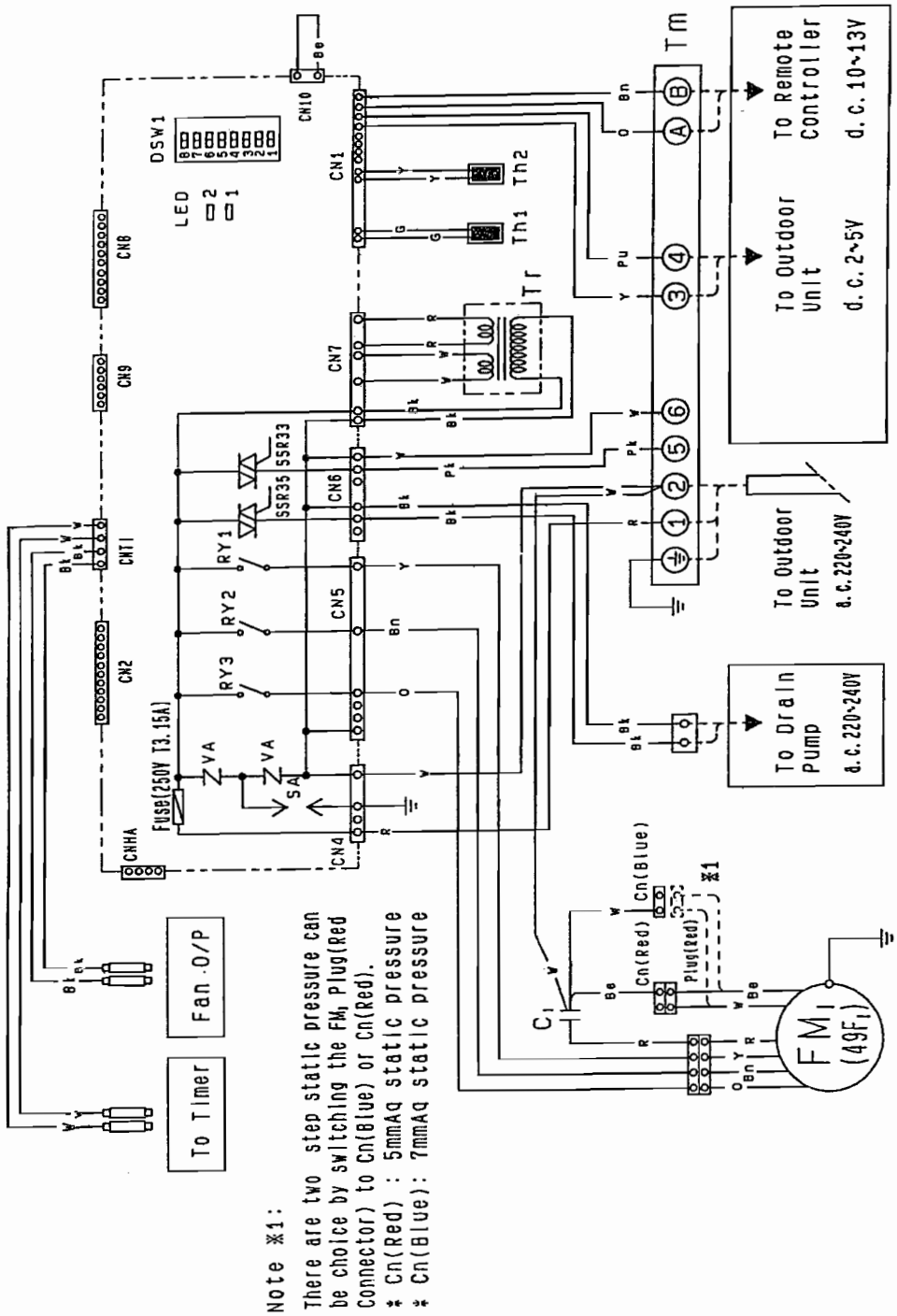
FM_1	Fan Motor	$49F_1$	Interal Thermostat for FM
VA	Varistor	C_1	Capacitor for FM
SA	Surge Absorber	Tm	Terminal Board for Control Circuit
Tr	Transformer	Th1	Thermistor for Indoor Temperature
Cn	Connector	Th2	Thermistor for Indoor Piping

WIRE COLOR

R	Red	Bk	Black
W	White	Bn	Brown
G	Gray	Be	Blue
Y	Yellow	Pk	Pink
O	Orange	Pu	Purple

CS-112E96JP,CS-140E96JP,CS-160E96JP

CONNECTION DIAGRAM (Indoor Unit)



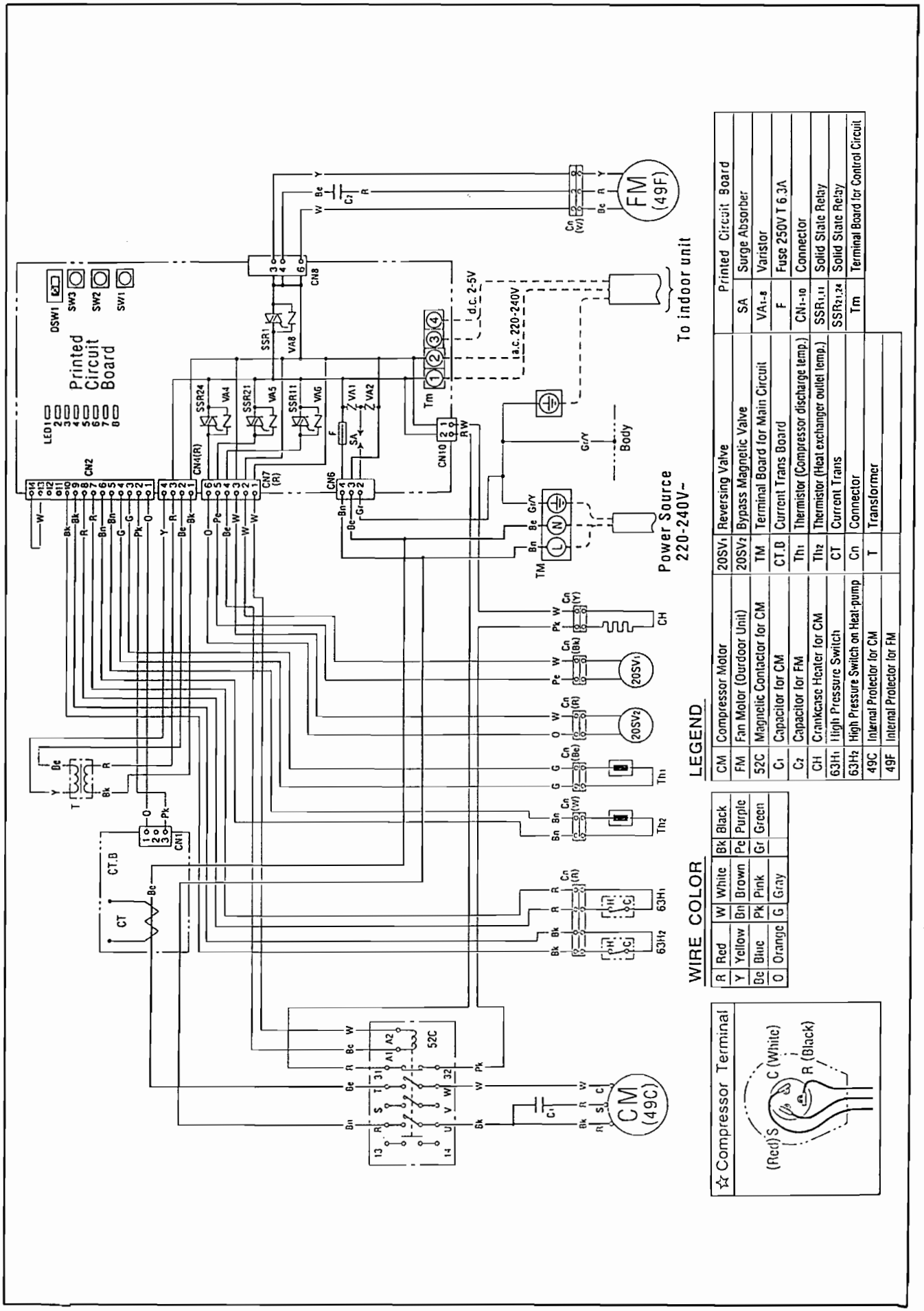
LEGEND

FM_1	Fan Motor	$49F_1$	Interal Thermostat for FM
VA	Varistor	C_1	Capacitor for FM
SA	Surge Absorber	Tm	Terminal Board for Control Circuit
Tr	Transformer	Th1	Thermistor for Indoor Temperature
Cn	Connector	Th2	Thermistor for Indoor Piping

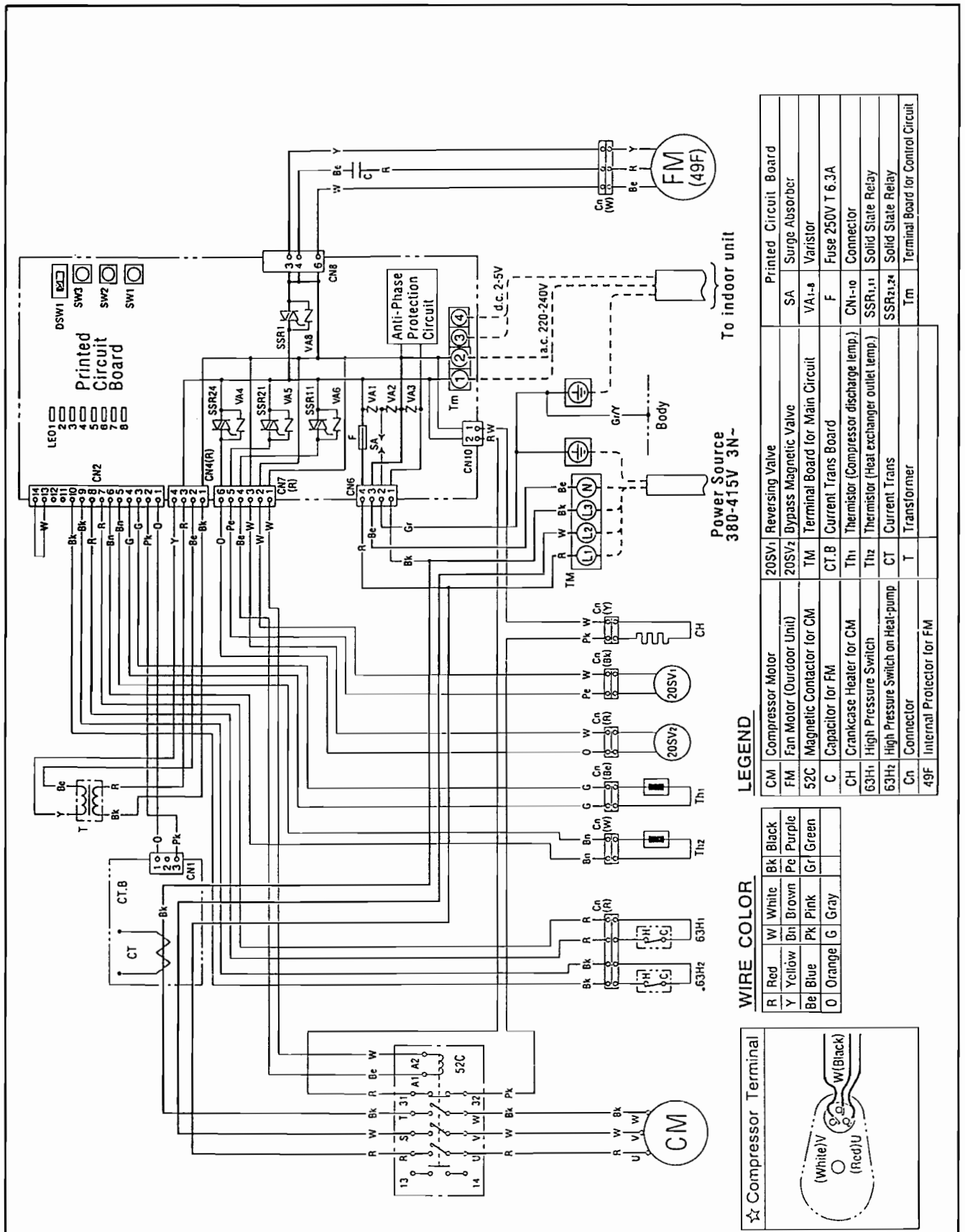
WIRE COLOR

R	Red	Bk	Black
W	White	Bn	Brown
G	Gray	Be	Blue
Y	Yellow	Pk	Pink
O	Orange	Pu	Purple

CU-71C52HP,CU-80C52HP,CU-71C02HP,CU-80C02HP



CU-71C52XP,CU-80C52XP,CU-71C02XP,CU-80C02XP

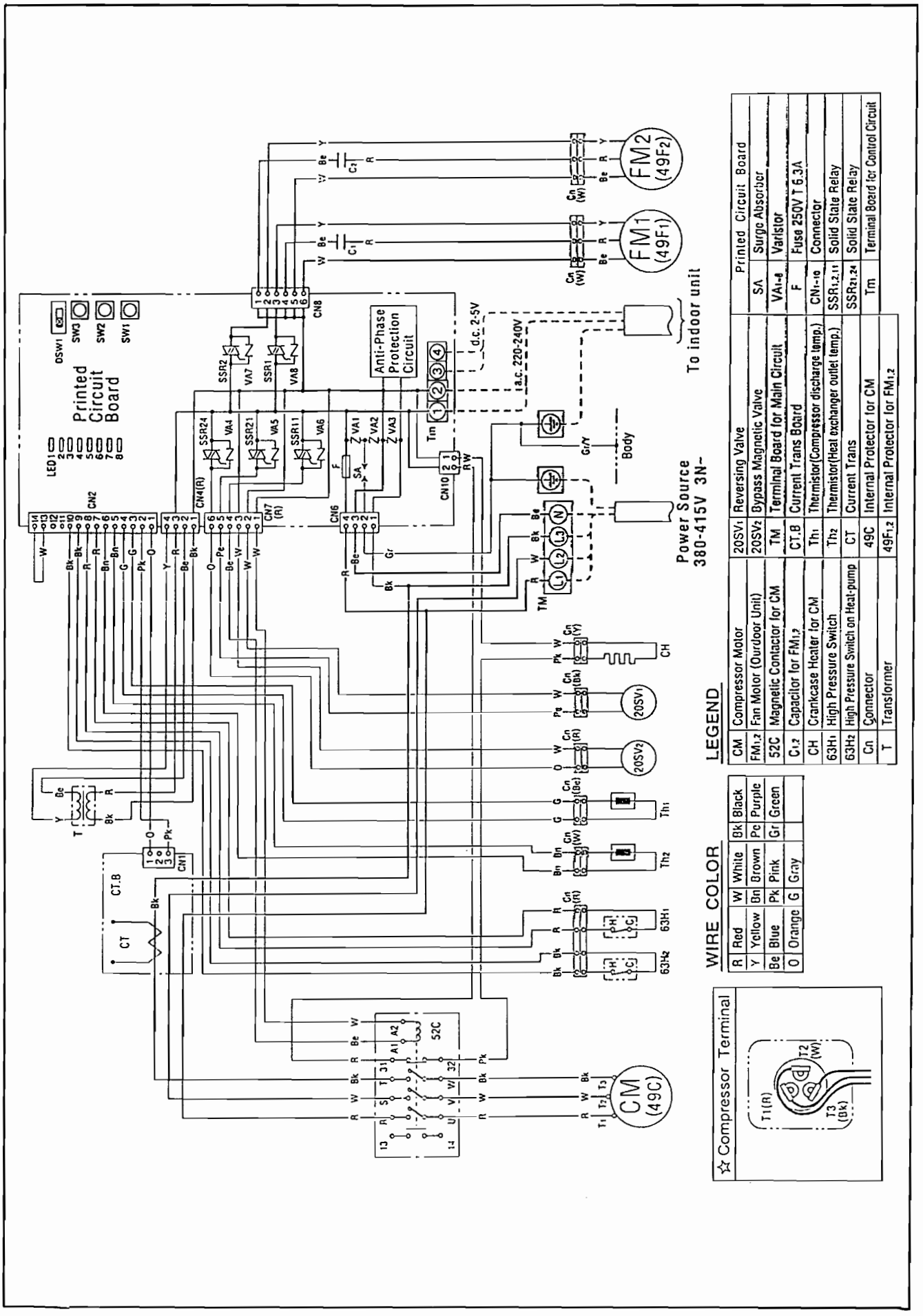


CM	Compressor Motor	20SV1	Reversing Valve
FM	Fan Motor (Ourdoor Unit)	20SV2	Bypass Magnetic Valve
52C	Magnetic Contactor for CM	TM	Terminal Board for Main Circuit
C	Capacitor for FM	CT.B	Current Trans Board
CH	Crankcase Heater for CM	Th1	Thermistor (Compressor discharge temp.)
63H1	High Pressure Switch	Th2	Thermistor (Heat exchanger outlet temp.)
63H2	High Pressure Switch on Heat-pump	CT	Current Trans
Cn	Connector	T	Transformer
49F	Internal Protector for FM		

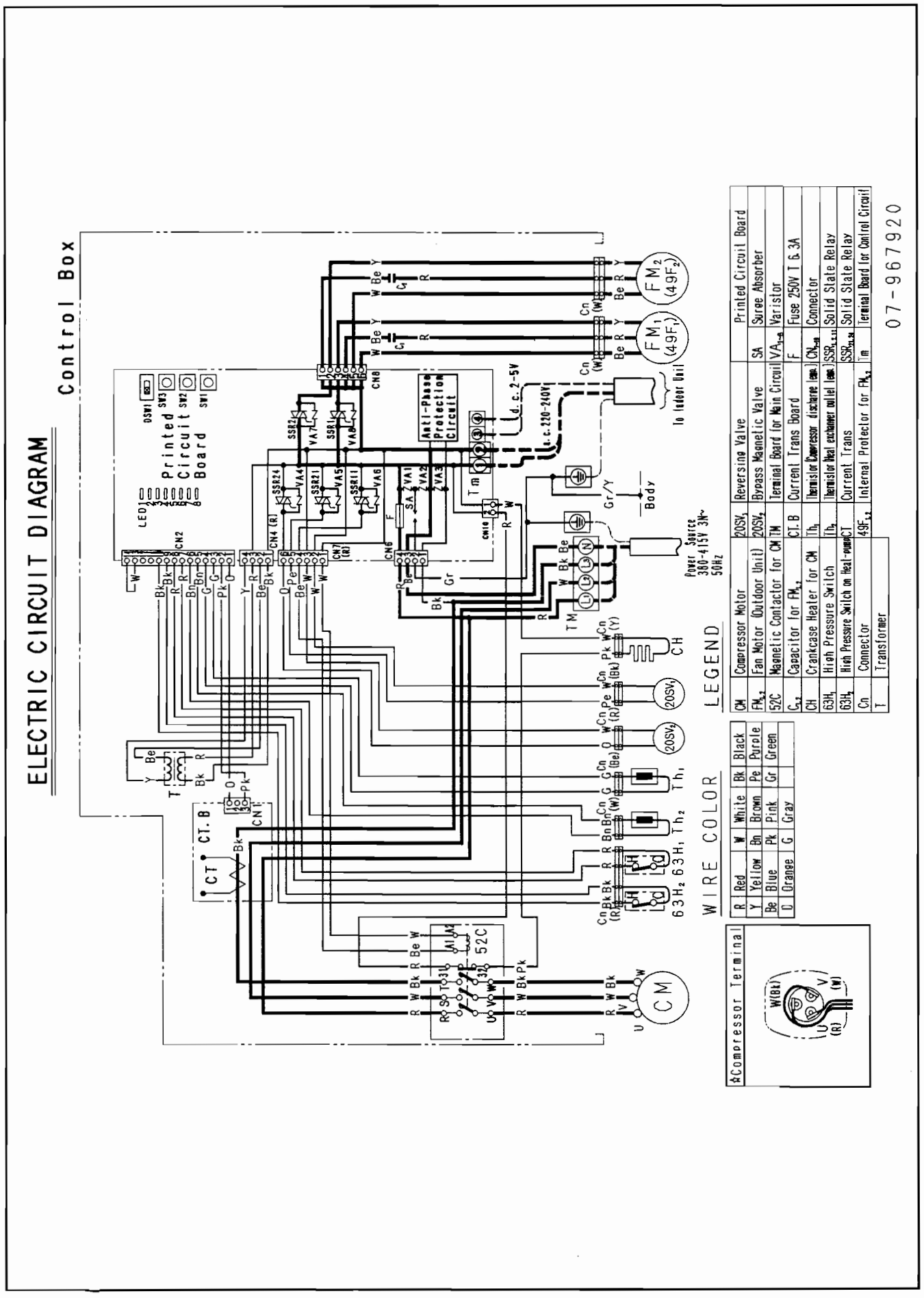
SA	Surge Absorber		
VA1-8	Varistor		
F	Fuse 250V T 6.3A		
CN1-10	Connector		
SSR1,11	Solid State Relay		
SSR21,24	Solid State Relay		
Tm	Terminal Board for Control Circuit		

R	Red	W	White	Bk	Black		
Y	Yellow	Bn	Brown	Pe	Purple		
Be	Blue	Pk	Pink	Gr	Green		
O	Orange	G	Gray				

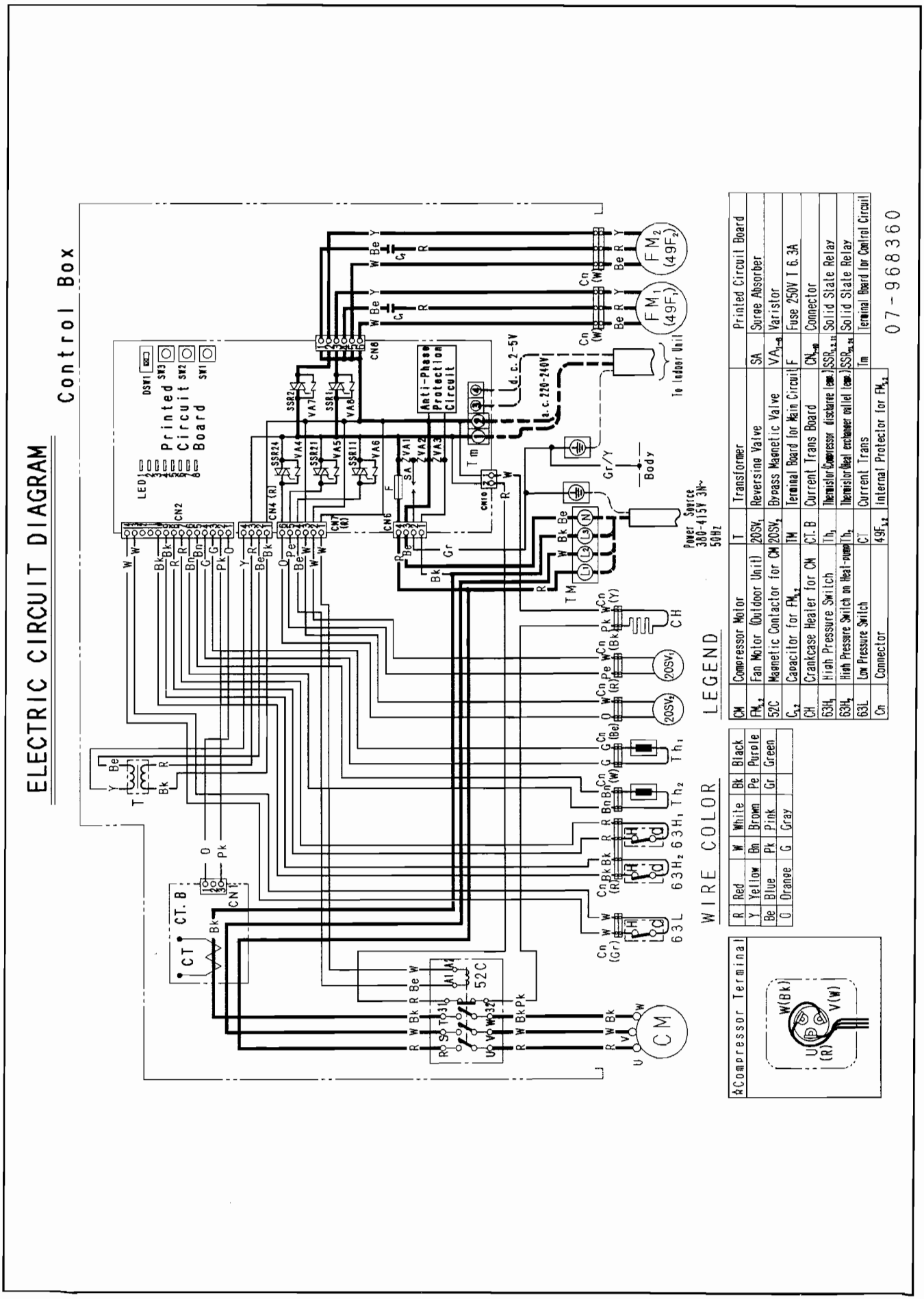
CU-112C52XP,CU-112C02XP



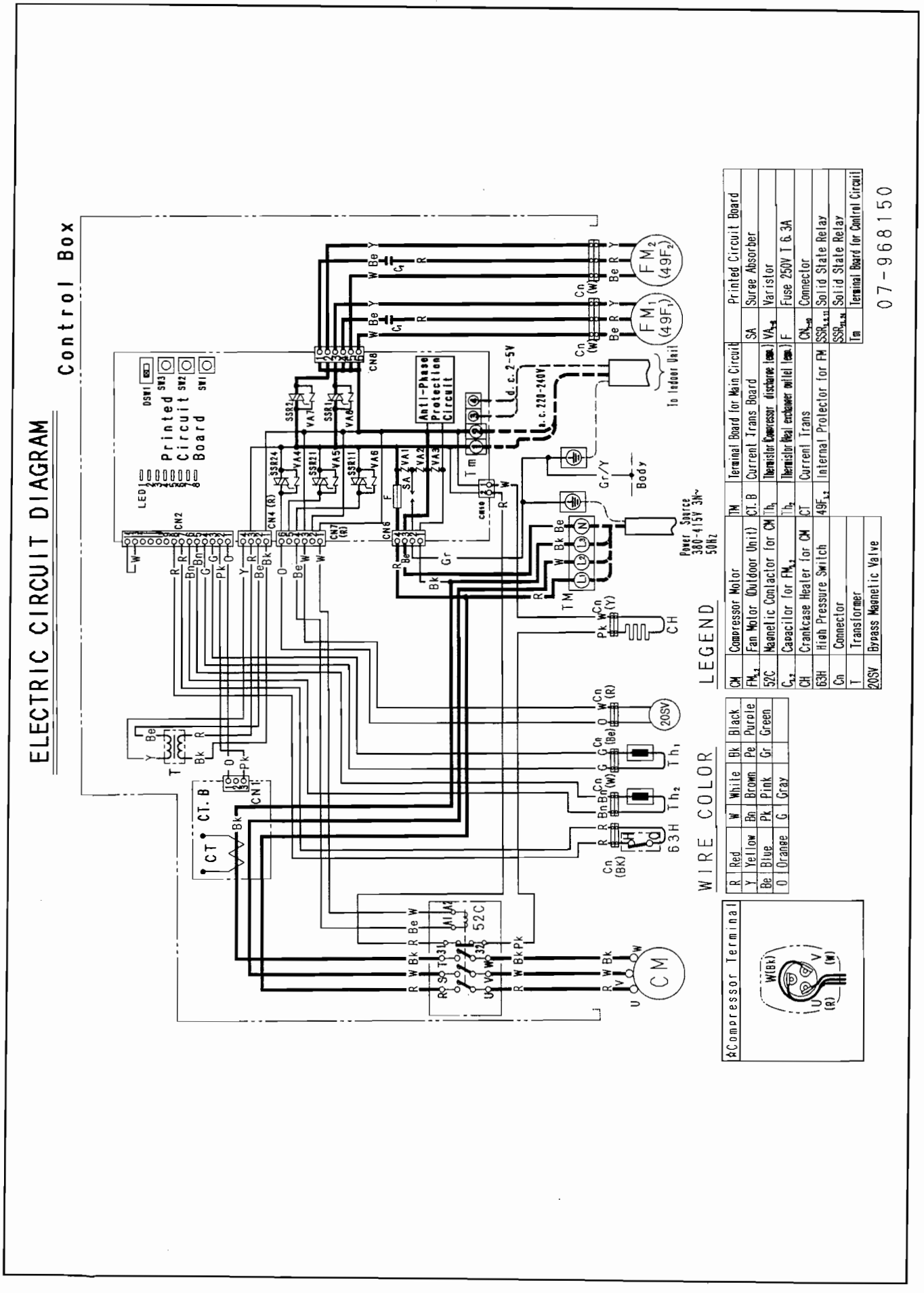
CU-140C53XP


ELECTRIC CIRCUIT DIAGRAM
Control Box
Printed Circuit Board
Anti-Phase Protection Circuit
d.c. 2~5V
d.c. 220~240V
Power Source 380~415V 3N~ 50Hz
To Indoor Unit
Body
CT. B
CT
CM
52C
CH
Th1
Th2
63H1 63H2
20SV1
20SV2
WIRE COLOR
R Red
Y Yellow
Be Blue
O Orange
W White
Bn Brown
Pk Pink
G Gray
Bk Black
Pe Purple
Gr Green
LEGEND
CM Compressor Motor
FM1,2 Fan Motor (Outdoor Unit)
52C Magnetic Contactor for CM
C1,2 Capacitor for FM1,2
CH Crankcase Heater for CM
63H1 High Pressure Switch
63H2 High Pressure Switch on Heat-pump
Cn Connector
T Transformer
20SV1 Reversing Valve
20SV2 Bypass Magnetic Valve
Terminal Board for Main Circuit
CT. B Current Trans Board
Th1 Thermistor(Compressor discharge temp.)
Th2 Thermistor(Heat exchanger outlet temp.)
CT Current Trans
49F1,2 Internal Protector for FM1,2
SA Surge Absorber
VA1~6 Varistor
F Fuse 250V T 6.3A
CN1~10 Connector
SSR1,2,11,21,24 Solid State Relay
Tm Terminal Board for Control Circuit
Compressor Terminal
W(Bk)
V
U
(W)
(R)
07-967920

CU-160C53XP


ELECTRIC CIRCUIT DIAGRAM
Control Box
Printed Circuit Board
Anti-Phase Protection Circuit
Power Source 380-415V 3N~ 50Hz
To Indoor Unit
Body
CT. B
52C
CM
CH
20SV1
20SV2
Th1
Th2
63H1 63H2
63L
FM1 (49F1)
FM2 (49F2)
WIRE COLOR
R Red
Y Yellow
Be Blue
O Orange
W White
Bn Brown
Pk Pink
G Gray
Bk Black
Pe Purple
Gr Green
CM Compressor Motor
FM1,2 Fan Motor (Outdoor Unit)
52C Magnetic Contactor for CM
C1,2 Capacitor for FM1,2
CH Crankcase Heater for CM
63H1 High Pressure Switch
63H2 High Pressure Switch on Heat-pump
63L Low Pressure Switch
Cn Connector
T Transformer
20SV1 Reversing Valve
20SV2 Bypass Magnetic Valve
TM Terminal Board for Main Circuit
CT. B Current Trans Board
Th1 Thermistor(Compressor discharge temp.)
Th2 Thermistor(Heat exchanger outlet temp.)
CT Current Trans
49F1,2 Internal Protector for FM1,2
SA Surge Absorber
VA1~6 Varistor
F Fuse 250V T 6.3A
CN1~6 Connector
SSR1,2,11 Solid State Relay
SSR4,21 Solid State Relay
Tm Terminal Board for Control Circuit
Printed Circuit Board
Compressor Terminal
W(Bk)
V(W)
U(R)
07-968360

CU-140C03XP


ELECTRIC CIRCUIT DIAGRAM
Control Box
Printed Circuit Board
Anti-Phase Protection Circuit
d.c. 2~5V
d.c. 220~240V
Power Source 380~415V 3N~ 50Hz
To Indoor Unit
Body
LEGEND
CM Compressor Motor
FM1,2 Fan Motor (Outdoor Unit)
52C Magnetic Contactor for CM
C1,2 Capacitor for FM1,2
CH Crankcase Heater for CM
63H High Pressure Switch
Cn Connector
T Transformer
20SV Bypass Magnetic Valve
TM Terminal Board for Main Circuit
CT, B Current Trans Board
Th1 Thermistor(Compressor discharge temp.)
Th2 Thermistor(Heat exchanger outlet temp.)
CT Current Trans
49F1,2 Internal Protector for FM
SA Surge Absorber
VA1~6 Varistor
F Fuse 250V T 6.3A
CN~~ Connector
SSR1,2,11 Solid State Relay
SSR21,24 Solid State Relay
Tm Terminal Board for Control Circuit
WIRE COLOR
R Red
Y Yellow
Be Blue
O Orange
W White
Bn Brown
Pk Pink
G Gray
Bk Black
Pe Purple
Gr Green
Compressor Terminal
07-968150

■APPLICABLE MODEL

ALL MODEL

●INDOOR UNIT

PRINTED CIRCUIT BOARD

S PHASE	4	CN4
SURGE ABSORBER	3	
———	2	
R PHASE	1	

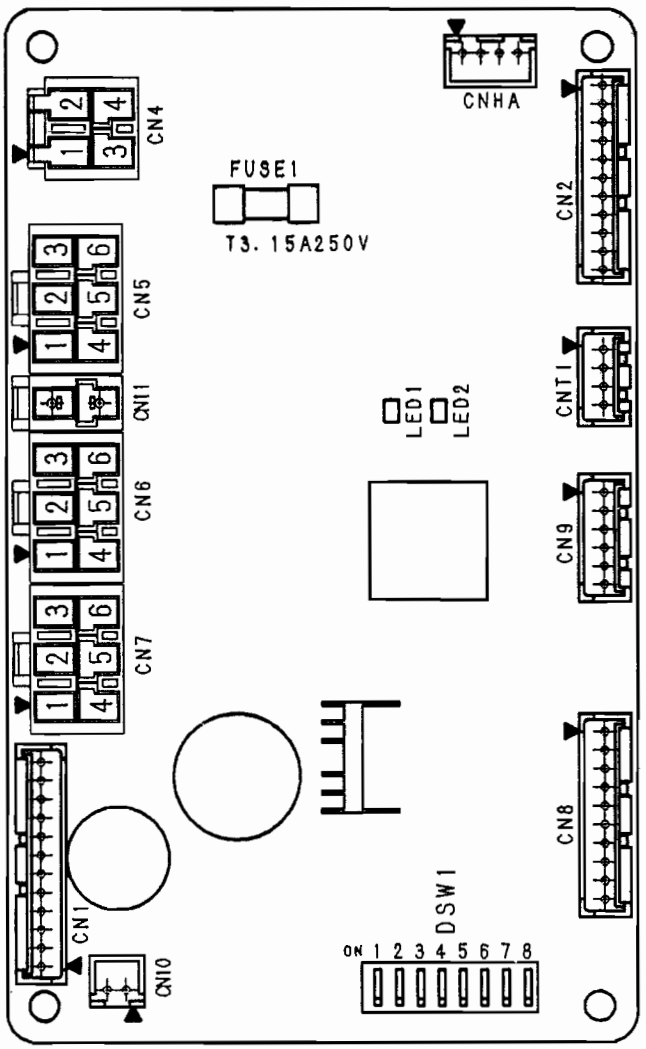
Option board connection(S PH)	2	
Option board connection(R PH)	1	

INDOOR FAN L	6	CN5
INDOOR FAN M	5	
INDOOR FAN H	4	
———	3	
COM	2	
COM	1	

LOUVER MOTOR		6	CN6
HEATER		5	
DRAIN PUMP		4	
COM	(S PH)	3	
COM	(S PH)	2	
COM	(S PH)	1	

TRANSFORMER 1ST	(R PH)	6	CN7
TRANSFORMER 2ND		5	
TRANSFORMER 2ND		4	
TRANSFORMER 1ST	(S PH)	3	
TRANSFORMER 2ND		2	
TRANSFORMER 2ND		1	

ROOM THERMISTOR	12	CN1
ROOM THERMISTOR	11	
PIPE THERMISTOR	10	
PIPE THERMISTOR	9	
———	8	
———	7	
LOUVER SW	6	
LOUVER SW	5	
COMMUNICATION WITH OUTDOOR UNIT	4	
COMMUNICATION WITH OUTDOOR UNIT	3	
WIRED REMOTE CONTROLLER	2	
WIRED REMOTE CONTROLLER	1	



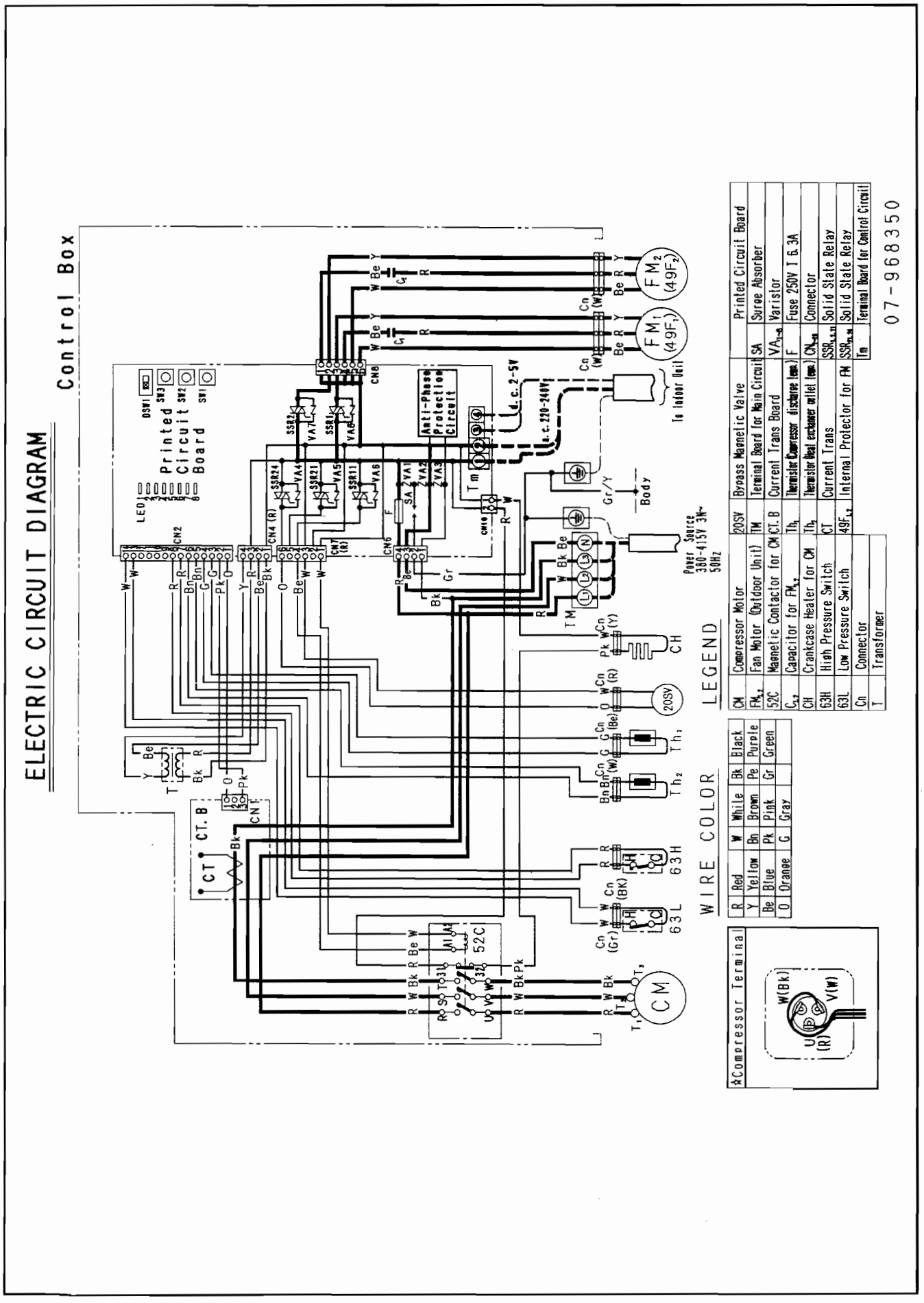
CN10

2	1
FLOAT SW	FLOAT SW

CN8	CENTRAL CONTROL BOARD CONNECTION	
CN2	OPTIONAL BOARD CONNECTION	

4	TIMER INPUT(GND)(Non Voltage A contact)	CNT1
3	TIMER INPUT(Non Voltage A contact)	
2	FAN OUTPUT(DC12V,Max 0.9W)	
1	FAN OUTPUT	

CU-160C03XP



CM	Compressor Motor	20SV	Bypass Magnetic Valve		Printed Circuit Board		
$FM_{1,2}$	Fan Motor (Outdoor Unit)	TM	Terminal Board for Main Circuit	SA	Surge Absorber		
52C	Magnetic Contactor for CM	CT. B	Current Trans Board	$VA_{1\sim6}$	Varistor		
$C_{1,2}$	Capacitor for $FM_{1,2}$	Th_1	Thermistor (Compressor discharge temp.)	F	Fuse 250V T 6.3A		
CH	Crankcase Heater for CM	Th_2	Thermistor (Heat exchanger outlet temp.)	$CN_{\sim6}$	Connector		
63H	High Pressure Switch	CT	Current Trans	$SSR_{1,11}$	Solid State Relay		
63L	Low Pressure Switch	$49F_{1,2}$	Internal Protector for FM	$SSR_{21,24}$	Solid State Relay		
Cn	Connector			Tm	Terminal Board for Control Circuit		
T	Transformer						

R	Red	W	White	Bk	Black		
Y	Yellow	Bn	Brown	Pe	Purple		
Be	Blue	Pk	Pink	Gr	Green		
O	Orange	G	Gray				

■APPLICABLE MODEL

ALL MODEL

●OUTDOOR UNIT

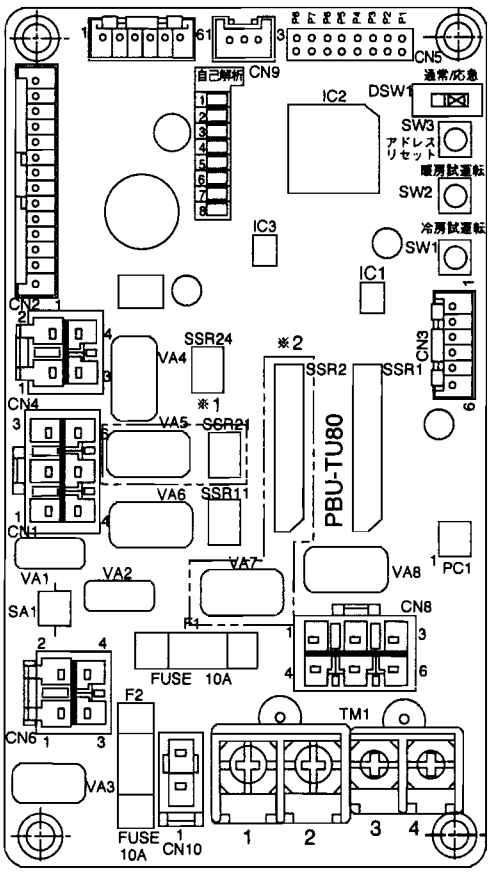
PRINTED CIRCUIT BOARD

※1 : Heat pump model only

※2 : CU-112C52XP, CU-112C02XP
CU-140C53XP, CU-140C03XP
CU-160C53XP, CU-160C03XP model only

CN2

14	GND
13	LOW PRESSURE SW
12	GND
11	DEMAND INPUT
10	GND
9	HEATING PRESSURE SW
8	GND
7	HIGH PRESSURE SW
6	GND
5	PIPE TEMP SENSOR
4	GND
3	DISCHARGE TEMP SENSOR
2	GND
1	CT



TM1

4	COMMUNICATION WITH INDOOR UNIT
3	COMMUNICATION WITH INDOOR UNIT
2	S Phase
1	R Phase

CN8

1	S Phase
2	Fan2(R)
3	Fan1(R)
4	S Phase
5	S Phase
6	S Phase

CN4

4	TRANSFER 2ND(S)
3	TRANSFER 1ST(R)
2	TRANSFER 2ND(R)
1	TRANSFER 1ST(S)

CN10

1	CRANKCASE HEATER(S)
2	CRANKCASE HEATER(R)

CN7

6	LIQUID BYPASS valve(R)
5	REVEERSING valve(R)
4	COMPRRESSOR relay(R)
3	LIQUID BYPASS valve(S)
2	REVERSING valve(S)
1	COMPRRESSOR relay(S)

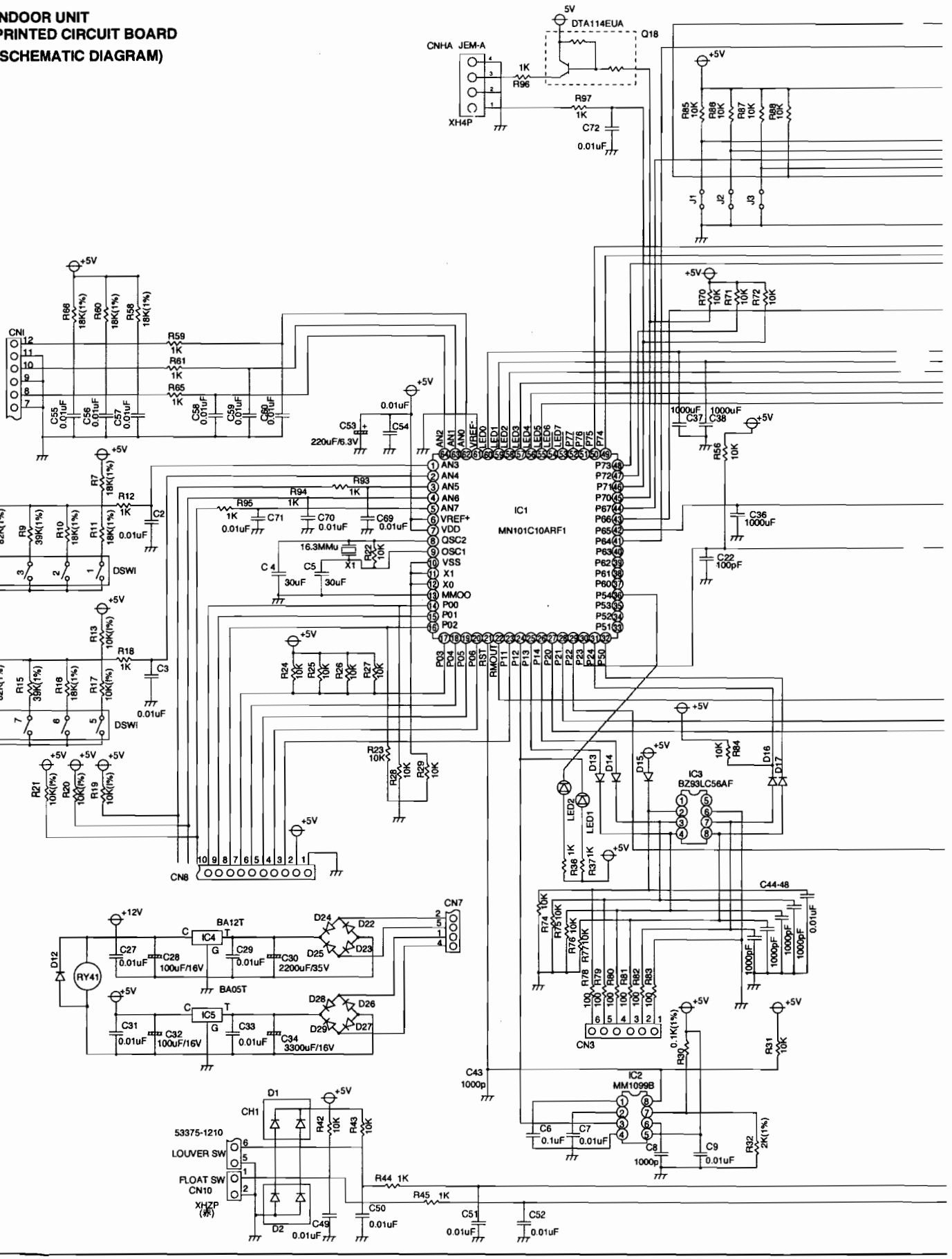
CN6

4	R Phase
3	S Phase
2	Earth
1	T Phase

■APPLICABLE MODEL

ALL MODEL

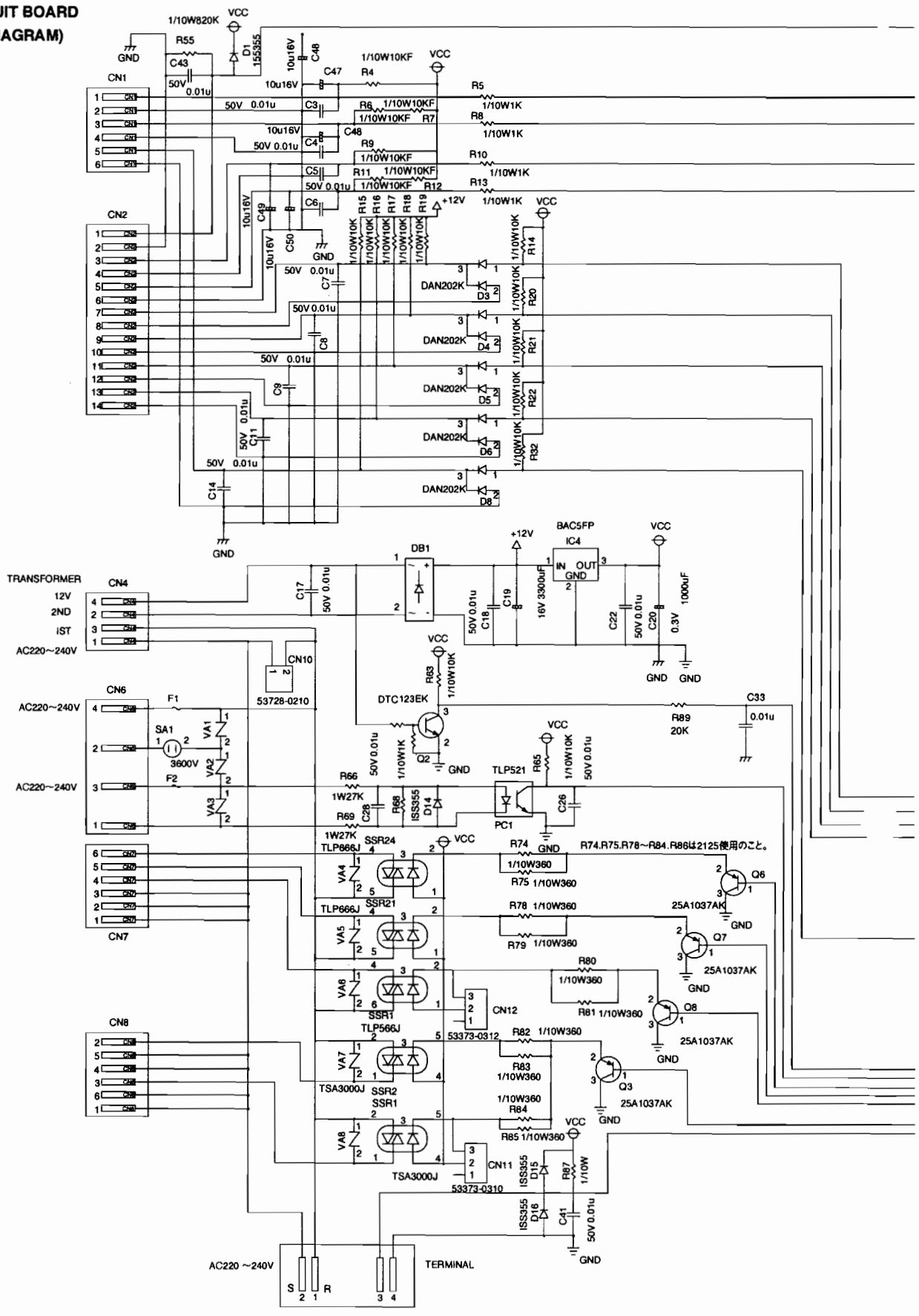
●INDOOR UNIT
PRINTED CIRCUIT BOARD
(SCHEMATIC DIAGRAM)

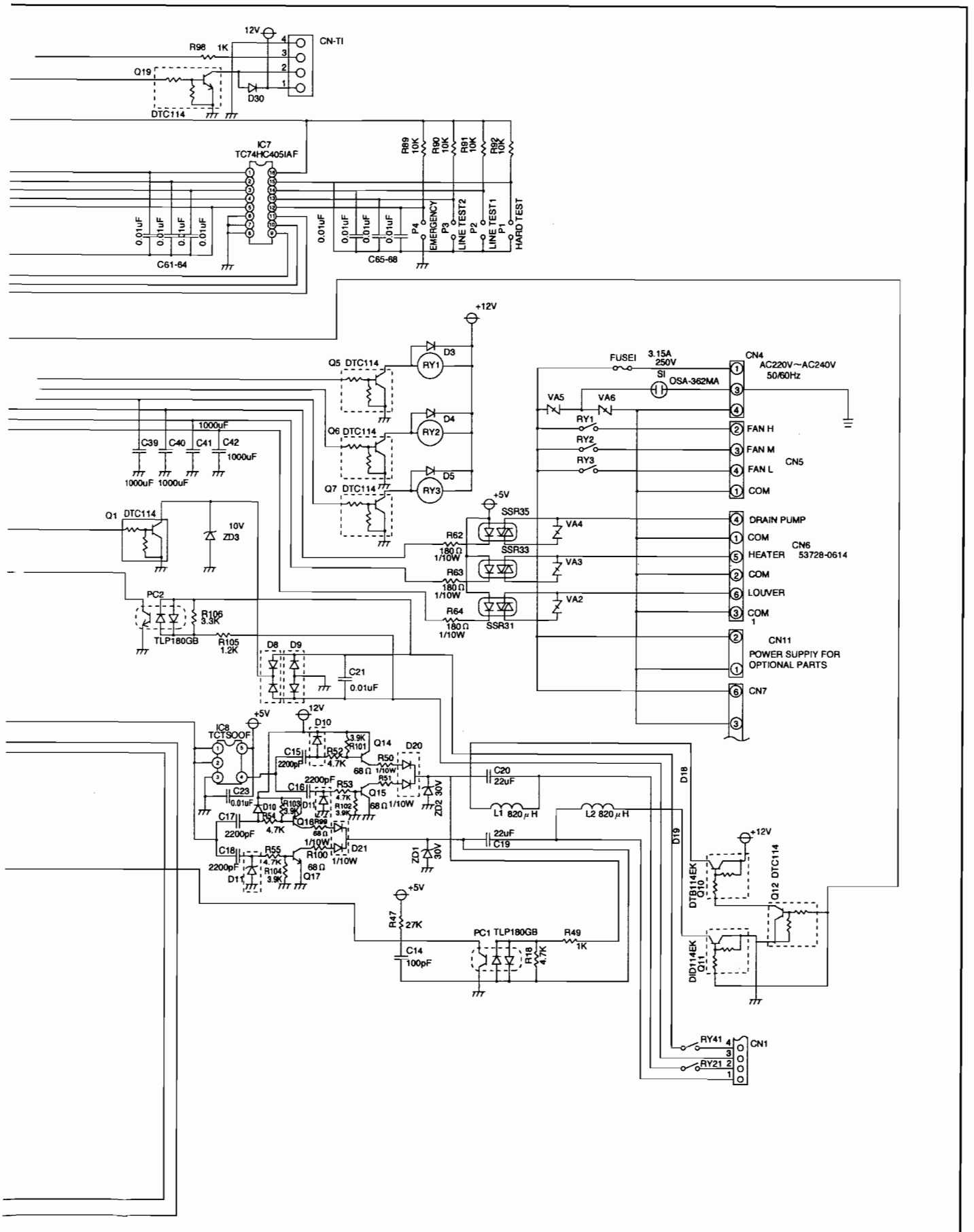


■APPLICABLE MODEL

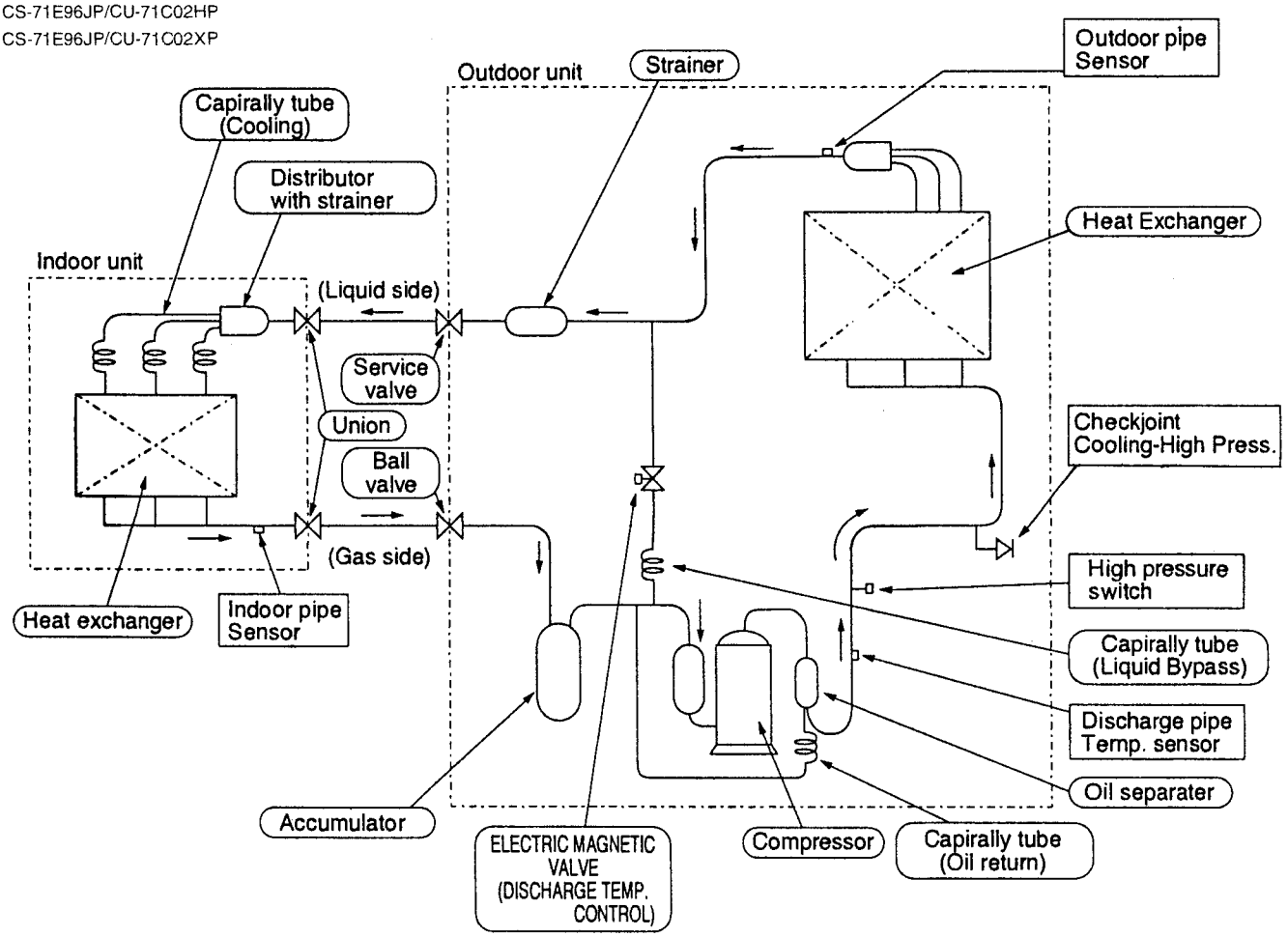
ALL MODEL

●OUTDOOR UNIT
PRINTED CIRCUIT BOARD
(SCHEMATIC DIAGRAM)

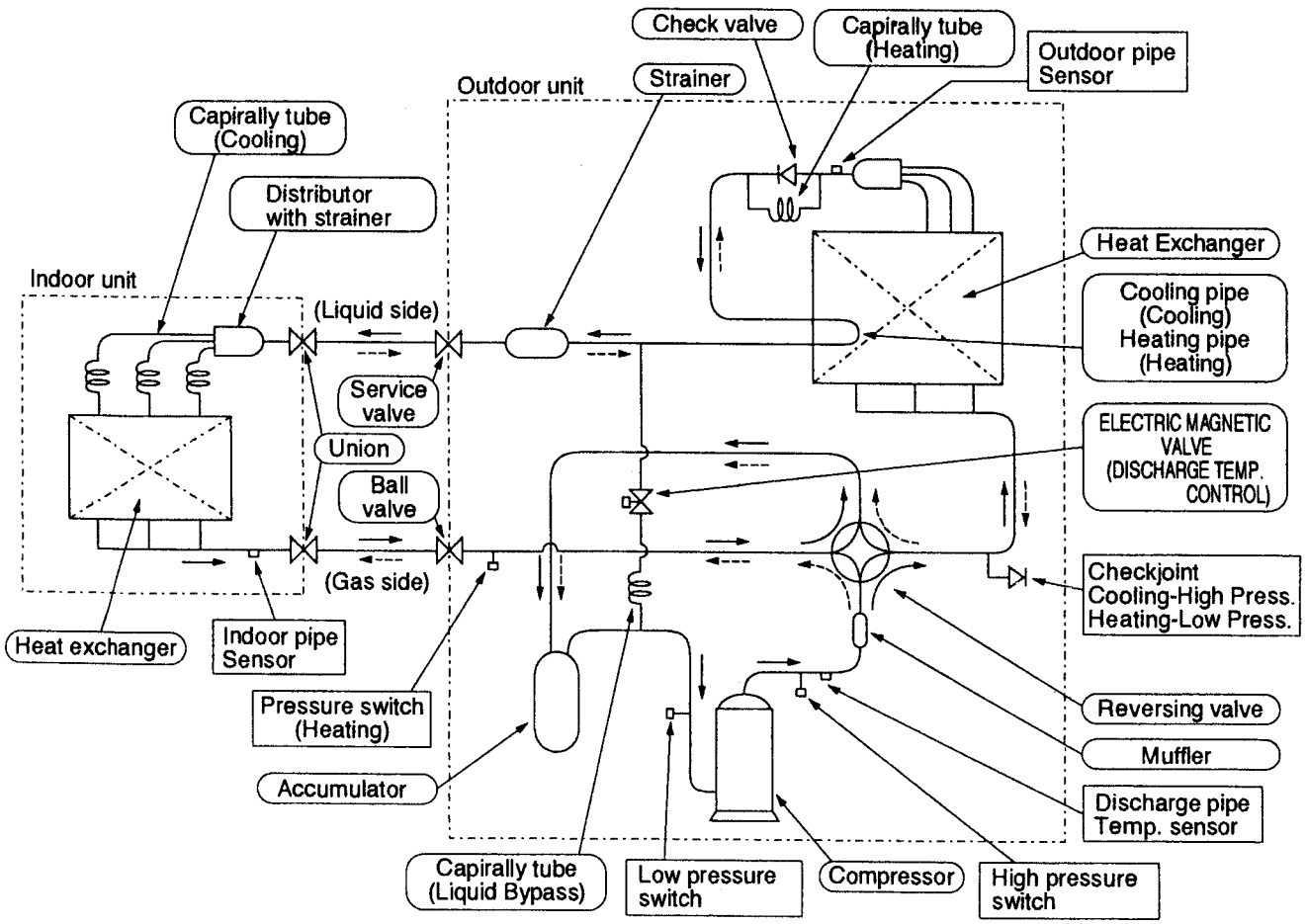



12V
CN-TI
R98 1K
Q19
DTC114
D30
IC7
TC74HC405IAF
R89 10K
R90 10K
R91 10K
R92 10K
0.01uF
C61-64
C65-68
P4 EMERGENCY
P3 LINE TEST2
P2 LINE TEST1
P1 HARD TEST
+12V
Q5 DTC114
Q6 DTC114
Q7 DTC114
D3
D4
D5
RY1
RY2
RY3
FUSE1 3.15A 250V
SI OSA-362MA
CN4
AC220V~AC240V
50/60Hz
VA5
VA6
FAN H
FAN M
FAN L
COM
CN5
1000uF
C39 C40 C41 C42
Q1 DTC114
10V ZD3
+5V
SSR35
SSR33
SSR31
R62 180Ω 1/10W
R63 180Ω 1/10W
R64 180Ω 1/10W
VA4
VA3
VA2
DRAIN PUMP
HEATER
LOUVER
CN6
53728-0614
PC2
TLP180GB
R106 3.3K
R105 1.2K
D8 D9
C21 0.01uF
CN11
POWER SUPPIY FOR
OPTIONAL PARTS
CN7
IC8
TCTS00F
D10
R101 3.9K
R52 4.7K
Q14
R50 68Ω 1/10W
D20
C15 2200pF
C16 2200pF
R53 4.7K
Q15
R51 68Ω 1/10W
ZD2 30V
C20 22uF
L1 820μH
L2 820μH
D18
D19
C23 0.01uF
D10
R103 3.9K
D11
R102 3.9K
C17 2200pF
R54 4.7K
Q16
R99 68Ω 1/10W
D21
C18 2200pF
R55 4.7K
R100 68Ω 1/10W
R104 3.9K
Q17
ZD1 30V
22uF C19
+12V
DTB114EK Q10
Q12 DTC114
DID114EK Q11
+5V
R47 27K
C14 100pF
PC1 TLP180GB
R49 1K
R18 4.7K
RY41
RY21
CN1

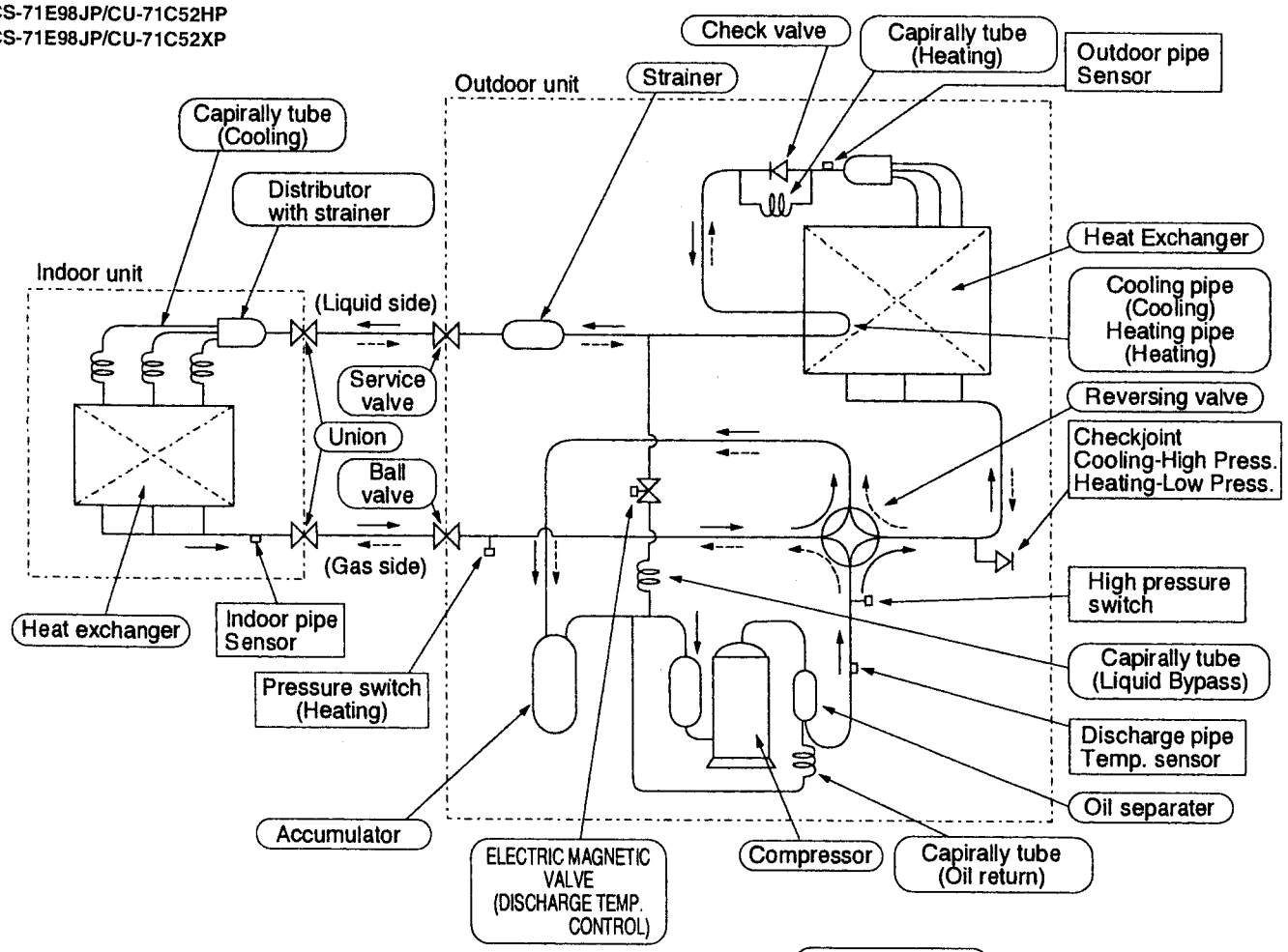
CS-71E96JP/CU-71C02HP
CS-71E96JP/CU-71C02XP



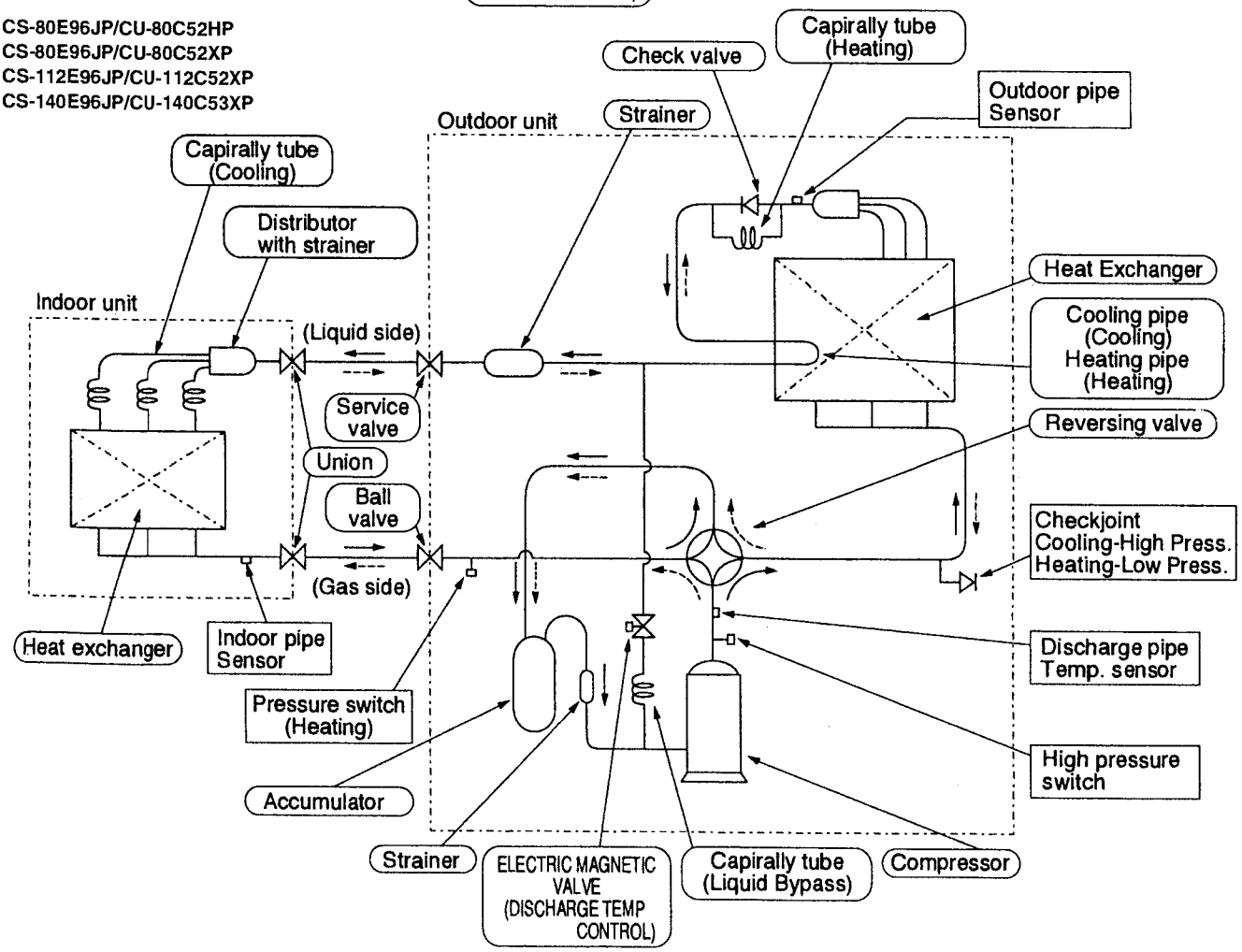
CS-160E96JP/CU-160C53XP



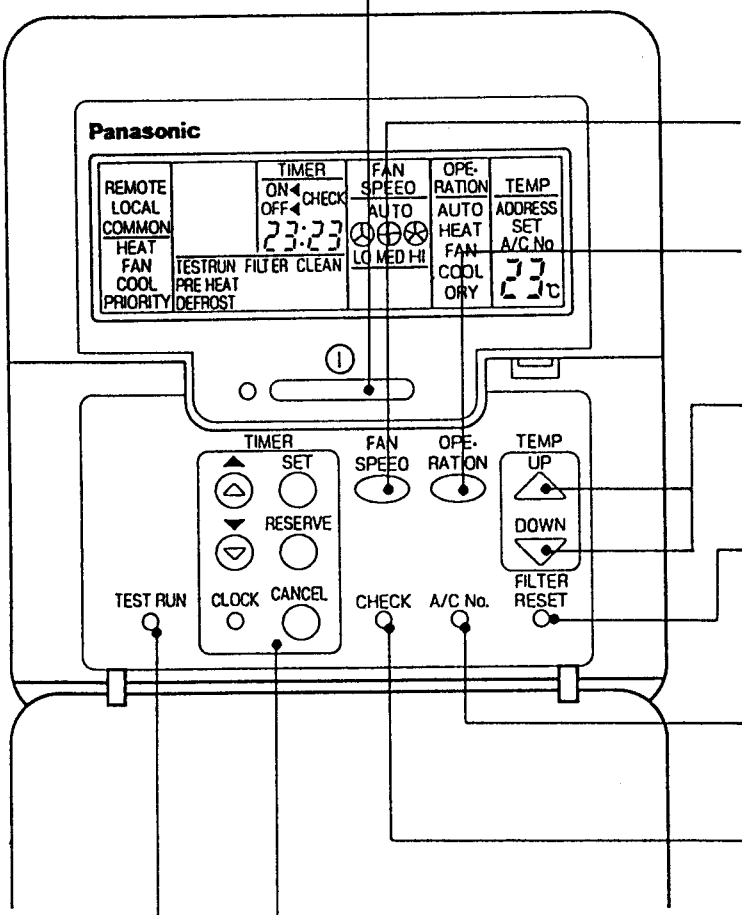
CS-71E98JP/CU-71C52HP
CS-71E98JP/CU-71C52XP



CS-80E96JP/CU-80C52HP
CS-80E96JP/CU-80C52XP
CS-112E96JP/CU-112C52XP
CS-140E96JP/CU-140C53XP



Operating panel



RUN switch
This switch is used to run or stop the indoor unit operation.

FAN SPEED switch

OPERATION MODE switch

TEMPERATURE SETTING switch

FILTER RESET switch
After the filter has been cleaned, press this switch to clear the "CLEAN FILTER" display.

Air conditioner No. switch
This switch is used during group control. It is not needed for normal operation.

CHECK switch
Press this switch if the check display is flashing.

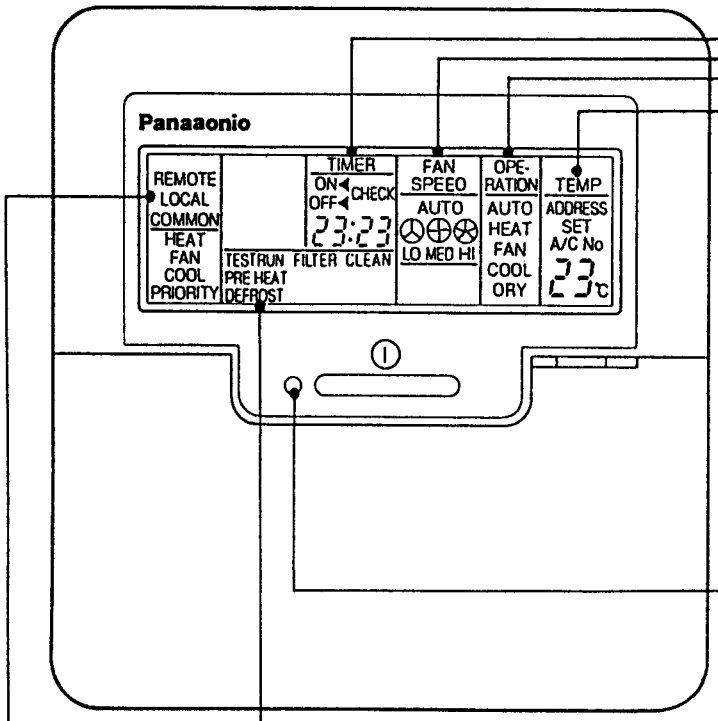
TIMER SET switch
This switch is used to set the timer operation and to set the current time.

TEST RUN switch
This switch is only used during test operation. It is not needed for normal operation.

■Wired Remete Controller

Name and function of each part

Dispiay panel



Timer/time setting dispiay
This display shows the timer operation setting time or the current time.

Fan speed display

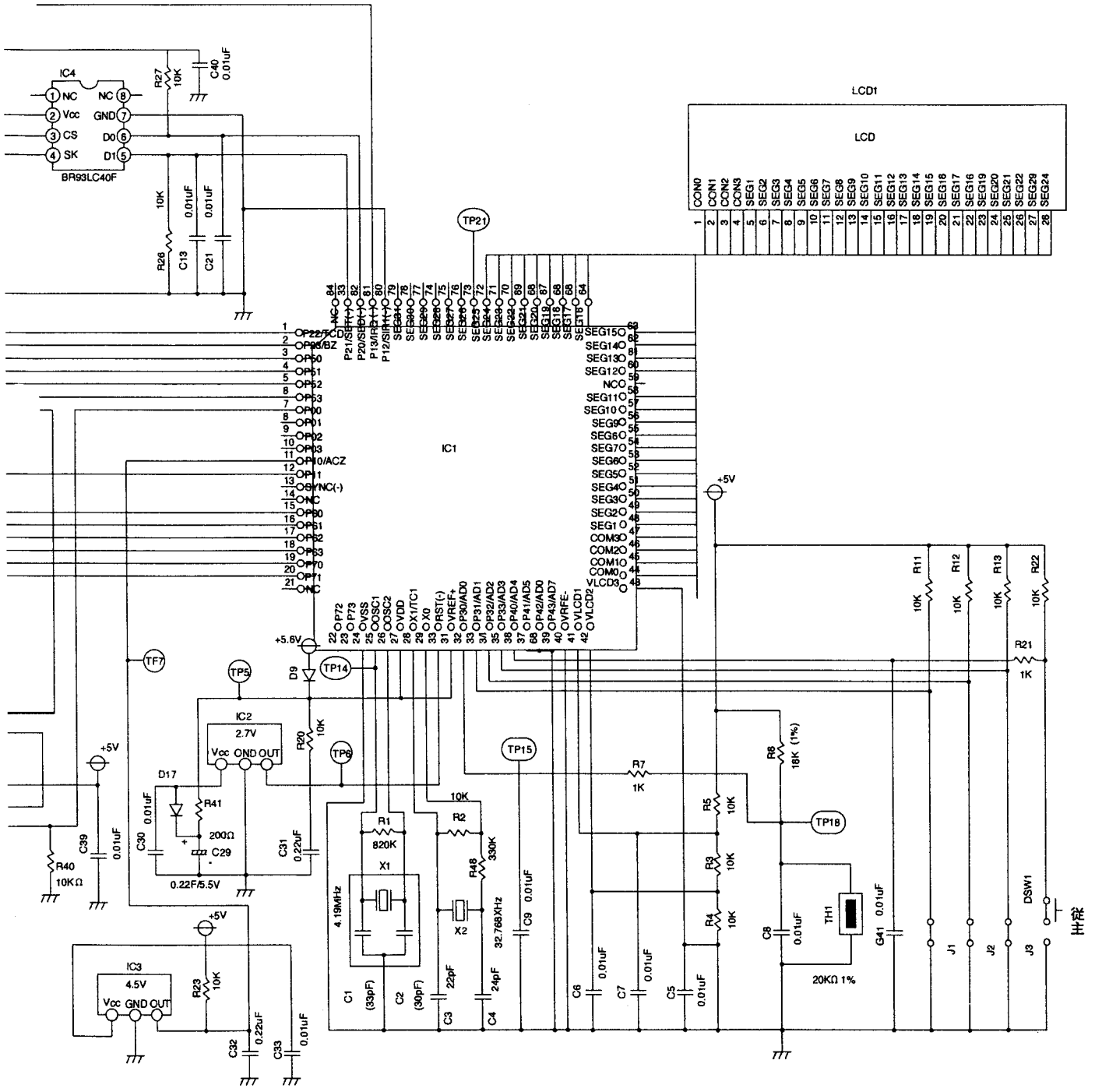
Operation selection display

Temperature setting dispiay
This display shows the setting temperature for the indoor unit.
The temperature can be set within the range 16° - 31°C.

Operation indicator (red)
This indicator illuminates when the indoor unit is running.

TEST
Indicates that the indoor unit is running in test operation mode.
PREHEAT DEFROST
Indicates that the indoor unit is running in pre-heating or defrosting mode.
CLEAN FILTER
Indicates that it is time to clean the filter.
It appears after the cumulative running time reaches approximately 200 hours.

REMOTE
The RUN and STOP functions on the remote control unit cannot be used.
LOCAL
All remote control unit functions can be used.
COMMON
Operation is possible using a device other than the remote control unit.

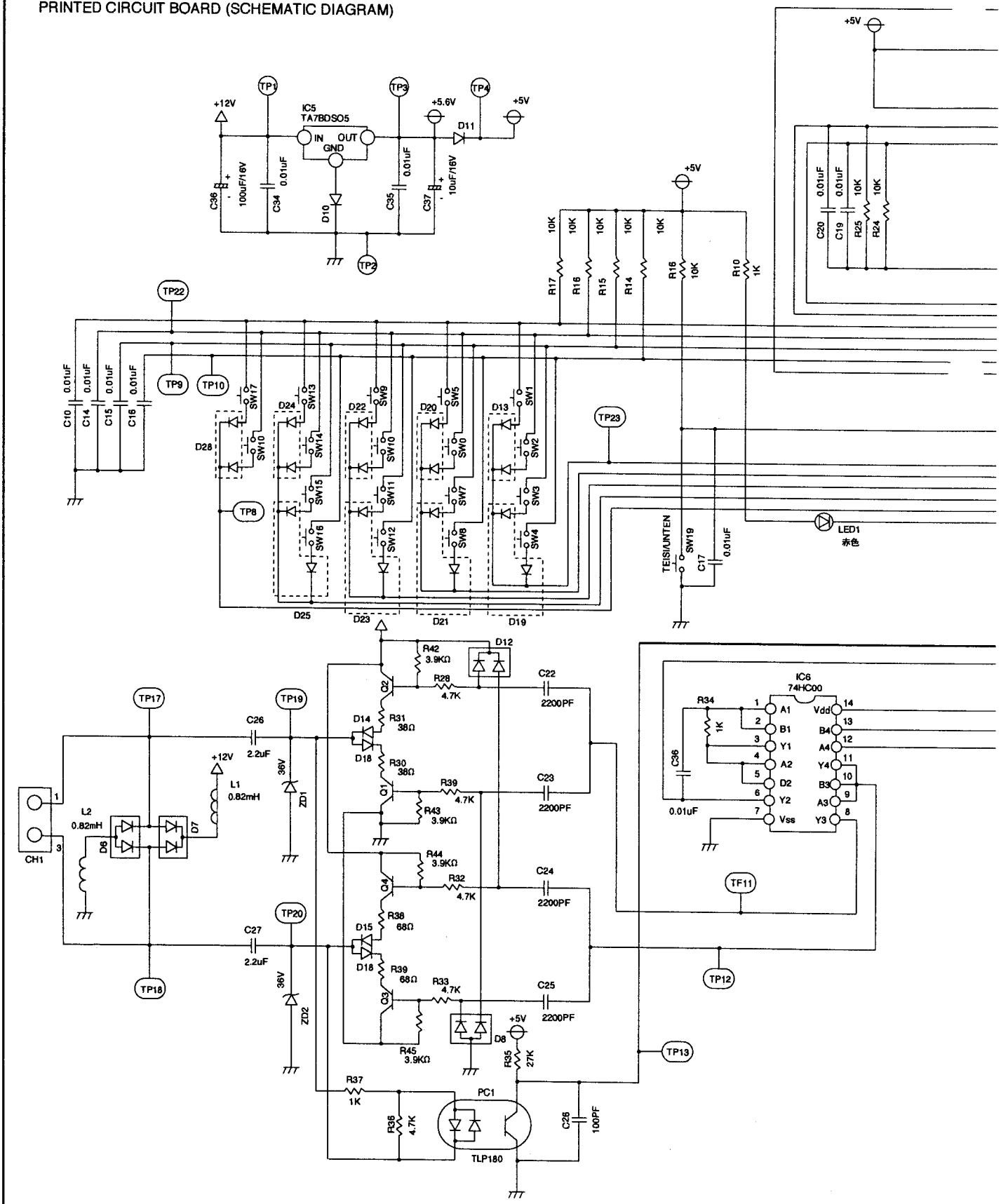


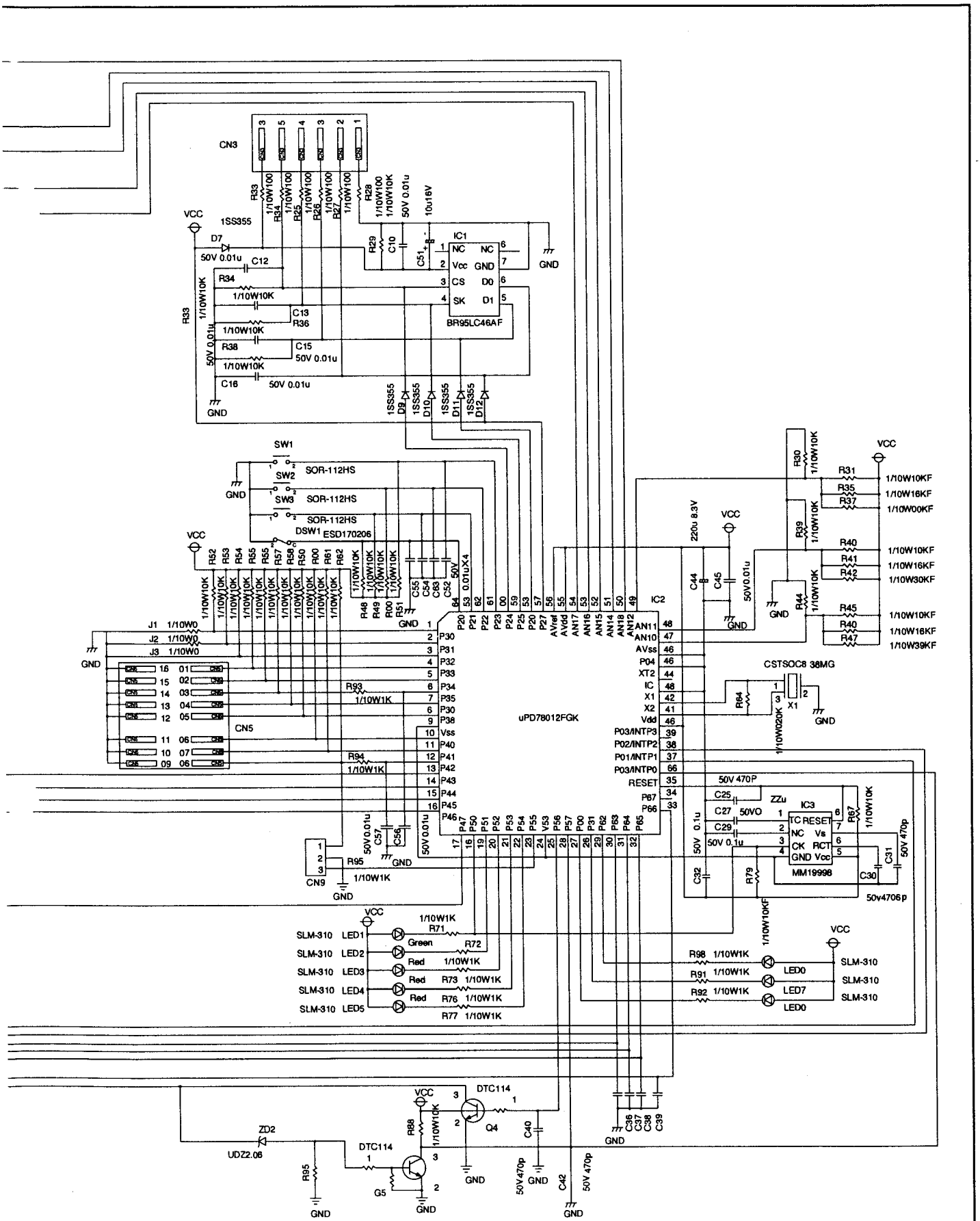
J1		J3	
J2		DSW1	TWIN·TRIPPLE SETTING (ON:SAVE,OFF:MAIN)
1	FAN SPEED	11	CANSEL
2	———	12	CLOCK
3	CHECK	13	SET TEMPERATURE UP
4	AIR SWING MANUAL	14	SET TEMPERATURE DOWN
5	OPERATION	15	FILTER RESET
6	———	16	TEST RUN
7	AIR CONDITIONER NO.	17	▲ (TO SET A LATER TIME)
8	AIR SWING AUTO	18	▼ (TO SET AN EARLIER TIME)
9	TIMER SET (ON/OFF)	19	RUN SWITCH (ON/OFF)
10	RESERVE	20	———

■APPLICABLE MODEL

ALL MODEL

●WIRED REMOTE CONTROLLER
PRINTED CIRCUIT BOARD (SCHEMATIC DIAGRAM)




CN3
VCC
1SS355
D7
50V 0.01u
C12
R34
1/10W10K
C13
R36
R38
C15
50V 0.01u
C16
GND
R33
R28
1/10W100
1/10W10K
50V 0.01u
10u16V
R29
C10
C51
IC1
NC
Vcc
CS
SK
GND
D0
D1
BR95LC46AF
1SS355 D9
1SS355 D10
1SS355 D11
1SS355 D12
SW1
SW2
SW3
SOR-112HS
DSW1 ESD170206
J1 1/10W0
J2 1/10W0
J3 1/10W0
CN5
R93
R94
1/10W1K
CN9
R95
C57
C56
50V 0.01u
uPD78012FGK
IC2
AN11
AN10
AVss
P04
XT2
IC
X1
X2
Vdd
P03/INTP3
P02/INTP2
P01/INTP1
P03/INTP0
RESET
P67
P66
P30
P31
P32
P33
P34
P35
P30
P38
Vss
P40
P41
P42
P43
P44
P45
P46
P47
P50
P51
P52
P53
P54
P55
V53
P56
P57
P00
P31
P62
P63
P64
P65
R30
R31
R35
R37
R39
R40
R41
R42
R44
R45
R47
1/10W10KF
1/10W16KF
1/10W00KF
1/10W30KF
1/10W39KF
220u 8.3V
C44
C45
50V0.01u
CSTSOC8 38MG
X1
R64
1/10W020K
C25
C27
C29
50VO
50V 0.1u
ZZu
IC3
TC RESET
NC Vs
CK RCT
GND Vcc
MM19998
C30
C31
50V 470p
50v4706p
R79
1/10W10KF
R67
C32
SLM-310 LED1
SLM-310 LED2
SLM-310 LED3
SLM-310 LED4
SLM-310 LED5
Green
Red
Red
Red
R71
R72
R73
R76
R77
1/10W1K
R98
R91
R92
LED0
LED7
LED0
DTC114
Q4
R88
C40
C36
C37
C38
C39
ZD2
UDZ2.06
R95
G5
C42
50V 470p

Power Supply

The applicable voltage range for each unit is given in "the following table" The working voltage among the three phases must be balanced within a 3% deviation from each voltage at the compressor terminals. The starting voltage must be higher than 85% of the rated voltage.

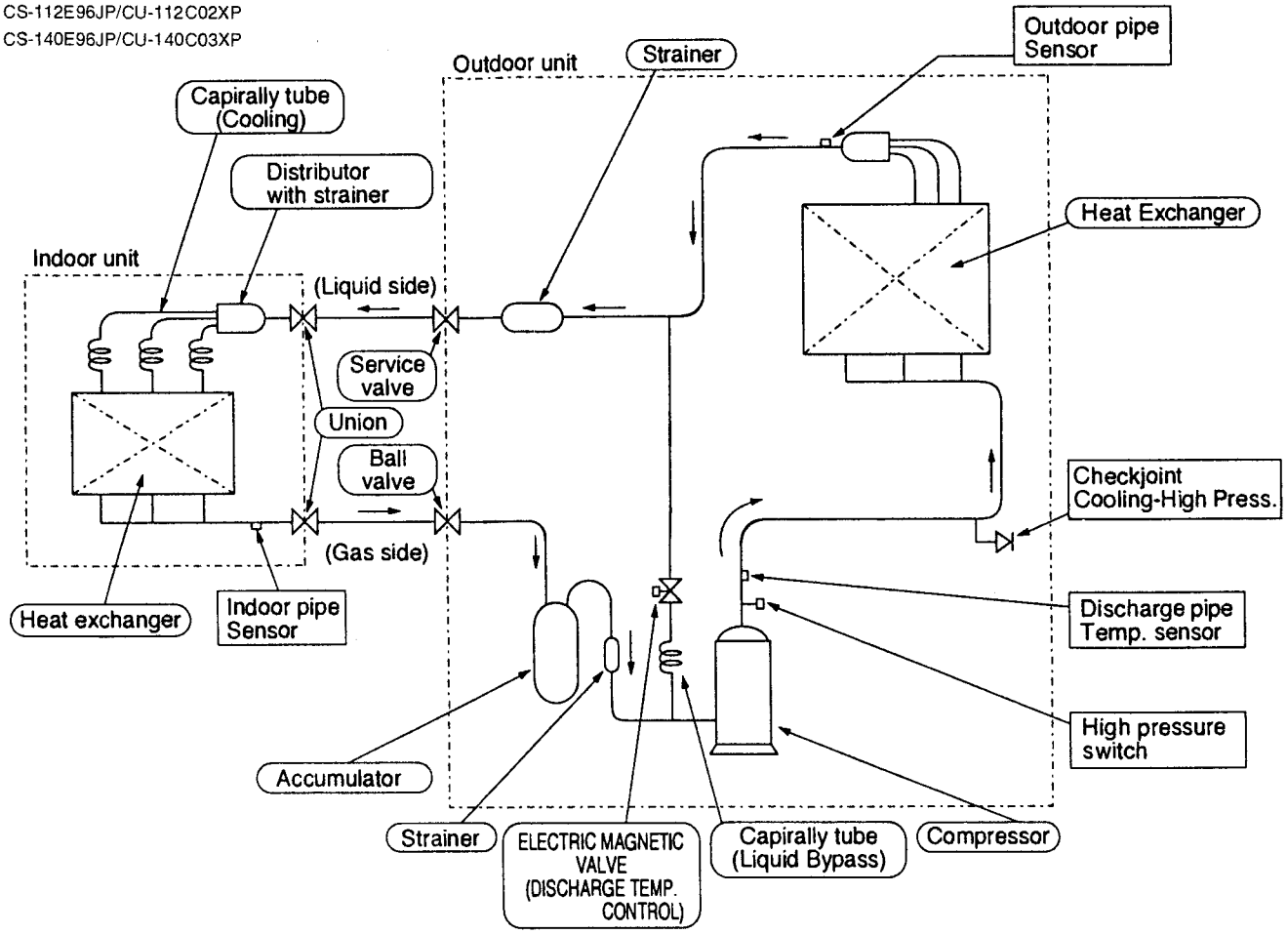
Power Supply

Model CU-	Unit Main Power		Applicable Voltage		Model CU-	Unit Main Power		Applicable Voltage	
	Phasa, Volts	Hz	Maximum	Minimum		Phase, Volts	Hz	Maximum	Minimum
71C52HP 80C52HP 71C02HP 80C02HP	1~220	50	242	198	71C52XP 80C52XP 112C52XP 140C53XP 180C53XP 71C02XP 80C02XP 112C02XP 140C03XP 160C03XP	3N~380	50	418	342
	1~230	50	253	207		3N~400	50	440	360
	1~240	50	254	216		3N~415	50	440	374

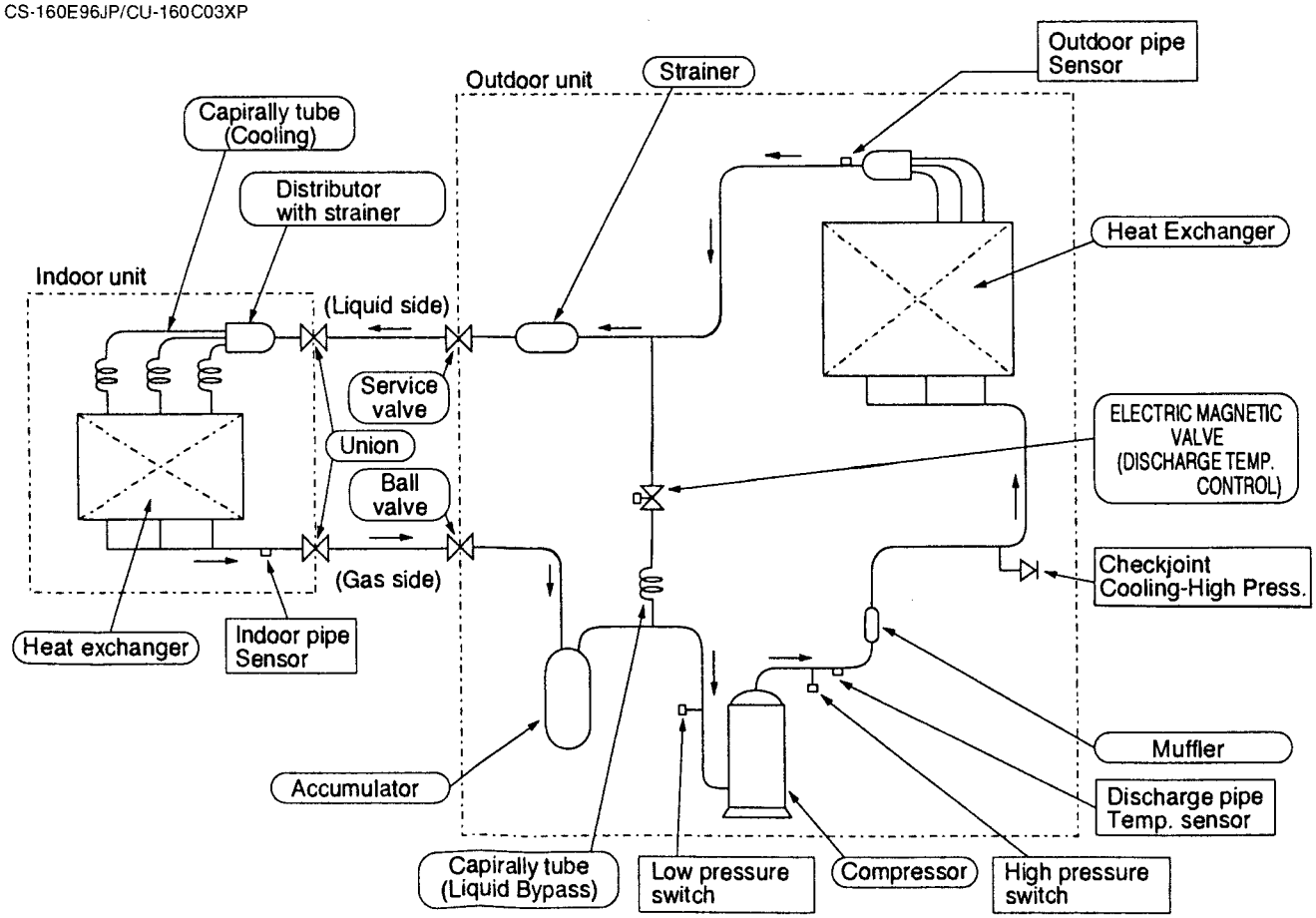
Indoor end Outdoor Temperature All Models

Operating	Hz	Indoor Temp. (D.B./W.B.) (°C)		Outdoor Temp. (D.B./W.B.) (°C)	
		Maximum	Minimum	Maximum	Minimum
Cooling	50	32/22.5	21/15.5	43/-	-5/-
Heating	50	28/-	16/-	21/15.5	-15/-

CS-80E96JP/CU-80C02HP
CS-80E96JP/CU-80C02XP
CS-112E96JP/CU-112C02XP
CS-140E96JP/CU-140C03XP



CS-160E96JP/CU-160C03XP



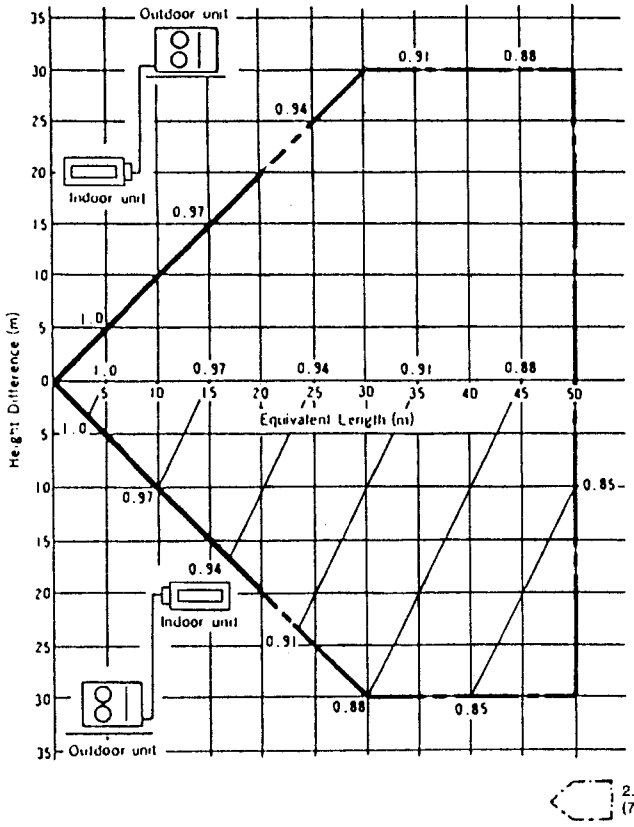
■ CORRECTION OF COOLING AND HEATING CAPACITIES

Correction of cooling and heating capacities according to the connecting pipe length.

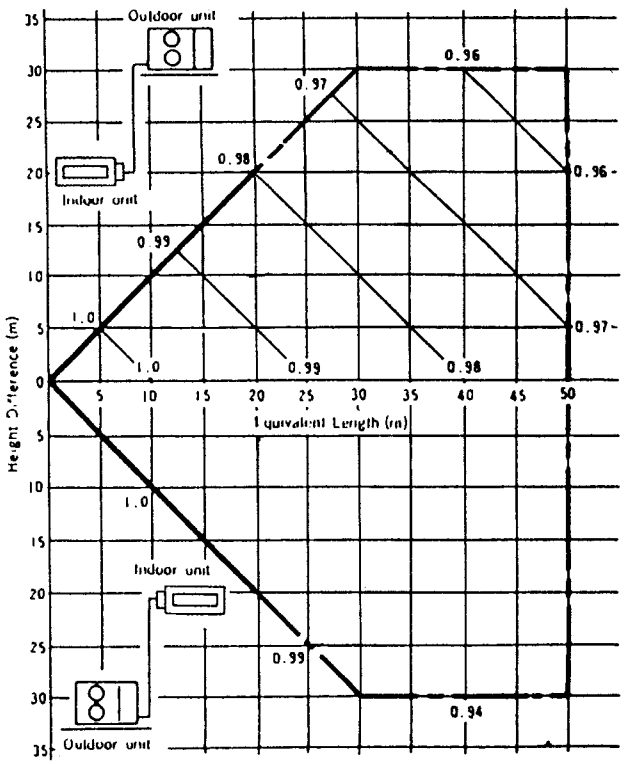
The data of cooling capacities (marked on the name plate) are based on 5 meters connecting pipe and horizontal installation.

For other pipe length of other installation multiply by the following correction factor to determine the revised cooling capacity.

(Cooling)



(Heating)



2.5HP~6HP (71E~160E)

Equivalent Length = actual pipe length + number of elbow x ELE + number of oil trap x ELO

ELE: equivalent length of elbow.

ELO: equivalent length of oil trap.

Outer diameter of gas side pipe mm (inch)	ELE
9.52	0.18
12.7 (1/2)	0.20
15.88(5/8)	0.25
19.05(3/4)	0.35

■ REFRIGERANT ADDITIONAL CHARGE

- **The piping length exceeds 30 meters.**
  APPLICABLE MODEL···ALL MODEL

Before shipment, this air conditioner is filled with the rated amount of refrigerant subject to 30m piping length. (The rated amount of refrigerant is indicated on the name plate.) But when the piping length exceeds 30m, additional charge is required according to the following table.

Model	Ref. Charge
2.5HP	20g per 1m
3~6HP	50g per 1m

Example: CS-71E96JP

In case of 30 m long pipe (one-way), the amount of refrigerant to be replenished is:(30-30)×20=0g

CS-140E96JP

In case of 50m long pipe (one-way), the amount of refrigerant to be replenished is:(50-30)×50=2,000g

3. Piping installation by oxlsting piping

CU-C52 series changes the liquld pipe size of the previous series. It is possible to use the exlsting piping by adjusting the refrigerant gas volume.
Please do correct piping installation referring to the table below.

Heat pump type	Cooling only type	Standard piping specification				Existing piping specification(Larger piping)			
		Liquid piping (φmm)	Gas piping (φmm)	Gas charge-less length (m)	Additional gas volume (g/m)	Liquid piping (φmm)	Gas piping (φmm)	Gas charge-less length (m)	Additional gas volume (g/m)
CU-71C52HP, XP	CU-71C02HP,XP	6.35	15.88	30	20	9.52	15.88	13	50
CU-80C52HP, XP	CU-60C02HP,XP	9.52	15.88	30	50	12.7	15.88	17	100
CU-112C52XP	CU-112C52XP	9.52	19.05	30	50	12.7	19.05	17	100
CS-140C53XP	CU-140C53XP	9.52	19.05	30	50	12.7	19.05	17	100
CS-160C53XP	CU-160C53XP	9.52	19.05	30	50	12.7	19.05	17	100

Attention

- Please never decrease the gas piping size.(It causes the breakdown of the compressor)
- The equivalent piping length and the cooling and heating capacity change rate are same as the standard piping specification.

OPERATING CHARACTERISTICS

	Model	Main Power Source		Compressor Motor			Indoor unit Fan Motor		Outdoor unit Fan Motor	
		Voltage	Frequency	S.C.	R.C.(A)	IPT(kW)	R.C.	IPT	R.C.	IPT
		(V)	(Hz)	(A)	COOL/HEAT	COOL/HEAT	(A)	(kW)	(A)	(kW)
HEAT PUMP MODEL	CS-71E96JP	220	50	60	11.4 / 10.9	2.29 / 2.14	0.66	0.15	0.50	0.11
	CU-71C52HP	230	50		10.9 / 10.4	2.29 / 2.14	0.66	0.15	0.50	0.11
		240	50		10.4 / 9.94	2.29 / 2.14	0.66	0.15	0.50	0.11
	CS-80E96JP	220	50	56	11.9 / 11.1	2.40 / 2.17	0.84	0.19	0.50	0.11
	CU-80C52HP	230	50		11.4 / 10.6	2.40 / 2.17	0.84	0.19	0.50	0.11
		240	50		10.9 / 10.1	2.40 / 2.17	0.84	0.19	0.50	0.11
	CS-71E96JP	380	50	27	4.41 / 4.01	2.29 / 2.14	0.66	0.15	0.50	0.11
	CU-71C52XP	400	50		4.21 / 3.91	2.29 / 2.14	0.66	0.15	0.50	0.11
		415	50		4.01 / 3.81	2.29 / 2.14	0.66	0.15	0.50	0.11
	CS-80E96JP	380	50	26	4.57 / 4.17	2.40 / 2.17	0.84	0.19	0.50	0.11
	CU-80C52XP	400	50		4.47 / 4.07	2.40 / 2.17	0.84	0.19	0.50	0.11
		415	50		4.37 / 3.97	2.40 / 2.17	0.84	0.19	0.50	0.11
	CS-112E96JP	380	50	48	6.01 / 5.81	3.16 / 2.98	0.97	0.22	1.01	0.22
	CU-112C52XP	400	50		5.81 / 5.61	3.16 / 2.98	0.97	0.22	1.01	0.22
		415	50		5.61 / 5.41	3.16 / 2.98	0.97	0.22	1.01	0.22
	CS-140E96JP	380	50	62	8.37 / 8.17	4.37 / 4.17	1.15	0.26	0.96	0.22
	CU-140C53XP	400	50		8.17 / 7.97	4.37 / 4.17	1.15	0.26	0.96	0.22
		415	50		7.97 / 7.77	4.37 / 4.17	1.15	0.26	0.96	0.22
	CS-160E96JP	380	50	61	8.80 / 8.60	4.59 / 4.55	1.31	0.30	1.08	0.24
	CU-160C53XP	400	50		8.60 / 8.40	4.59 / 4.55	1.31	0.30	1.08	0.24
		415	50		8.40 / 8.20	4.59 / 4.55	1.31	0.30	1.08	0.24
COOLING ONLY MODEL	CS-71E96JP	220	50	60	11.4	2.29	0.66	0.15	0.50	0.11
	CU-71C02HP	230	50		10.9	2.29	0.66	0.15	0.50	0.11
		240	50		10.4	2.29	0.66	0.15	0.50	0.11
	CS-80E96JP	220	50	56	11.9	2.40	0.84	0.19	0.50	0.11
	CU-80C02HP	230	50		11.4	2.40	0.84	0.19	0.50	0.11
		240	50		10.9	2.40	0.84	0.19	0.50	0.11
	CS-71E96JP	380	50	27	4.41	2.29	0.66	0.15	0.50	0.11
	CU-71C02XP	400	50		4.21	2.29	0.66	0.15	0.50	0.11
		415	50		4.01	2.29	0.66	0.15	0.50	0.11
	CS-80E96JP	380	50	26	4.57	2.40	0.84	0.19	0.50	0.11
	CU-80C02XP	400	50		4.47	2.40	0.84	0.19	0.50	0.11
		415	50		4.37	2.40	0.84	0.19	0.50	0.11
	CS-112E96JP	380	50	48	6.01	3.16	0.97	0.22	1.01	0.22
	CU-112C02XP	400	50		5.81	3.16	0.97	0.22	1.01	0.22
		415	50		5.61	3.16	0.97	0.22	1.01	0.22
	CS-140E96JP	380	50	62	8.37	4.37	1.15	0.26	0.96	0.22
	CU-140C03XP	400	50		8.17	4.37	1.15	0.26	0.96	0.22
		415	50		7.97	4.37	1.15	0.26	0.96	0.22
	CS-160E96JP	380	50	61	8.80	4.59	1.31	0.30	1.08	0.24
	CU-160C03XP	400	50		8.60	4.59	1.31	0.30	1.08	0.24
		415	50		8.40	4.59	1.31	0.30	1.08	0.24

Legend: S.C.: Starting Current
R.C.: Running Current
IPM: Power Consumption

Fan Performance

Model		CS-71E96JP					
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	0.71	0.16	98.0	1205	20
	59Pa(6mmAq)	Me	0.62	0.14	98.2	1110	17.5
	49Pa(5mmAq)	Lo	0.53	0.12	98.4	1005	15
L	49Pa(5mmAq)	Hi	0.66	0.15	98.8	1110	20
	39Pa(4mmAq)	Me	0.58	0.13	97.5	1005	17.5
	29Pa(3mmAq)	Lo	0.49	0.11	97.6	890	15

Model		CS-80E96JP					
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	0.88	0.20	98.8	1310	25
	59Pa(6mmAq)	Me	0.75	0.17	98.6	1200	22
	49Pa(5mmAq)	Lo	0.66	0.15	98.8	1100	19
L	49Pa(5mmAq)	Hi	0.84	0.19	98.3	1230	25
	39Pa(4mmAq)	Me	0.71	0.16	98.0	1120	22
	29Pa(3mmAq)	Lo	0.62	0.14	98.2	990	19

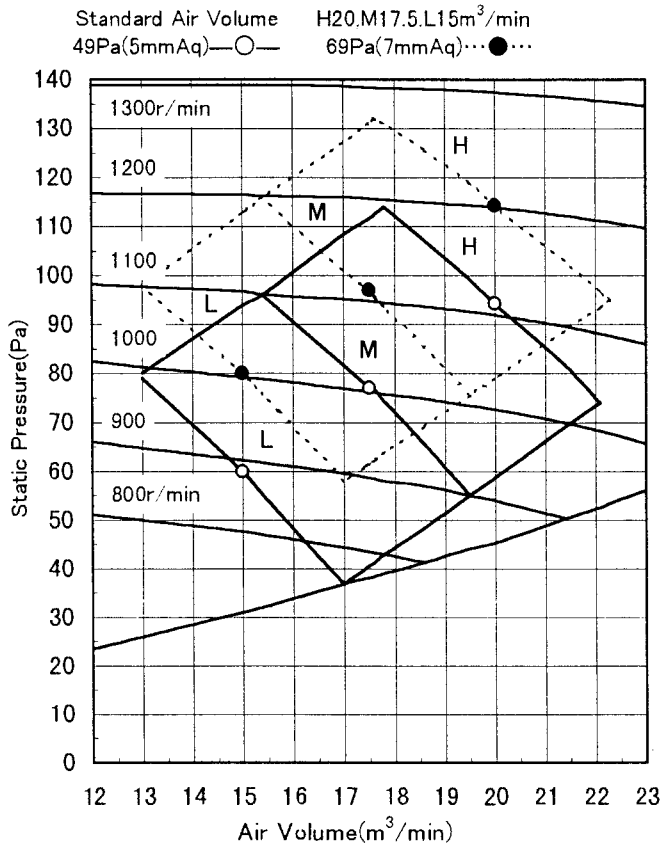
Model		CS-112E96JP					
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	1.10	0.25	98.8	1330	35
	59Pa(6mmAq)	Me	0.97	0.22	98.6	1190	30
	49Pa(5mmAq)	Lo	0.80	0.18	97.8	1070	25
L	49Pa(5mmAq)	Hi	0.97	0.22	98.6	1230	35
	39Pa(4mmAq)	Me	0.80	0.18	97.8	1100	30
	29Pa(3mmAq)	Lo	0.68	0.15	95.9	950	25

Model		CS-140E96JP					
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	1.21	0.27	97.0	1360	40
	59Pa(6mmAq)	Me	1.03	0.23	97.1	1230	35
	49Pa(5mmAq)	Lo	0.92	0.20	94.5	1110	30
L	49Pa(5mmAq)	Hi	1.15	0.26	98.3	1270	40
	39Pa(4mmAq)	Me	1.02	0.23	98.0	1140	35
	29Pa(3mmAq)	Lo	0.90	0.20	96.6	1000	30

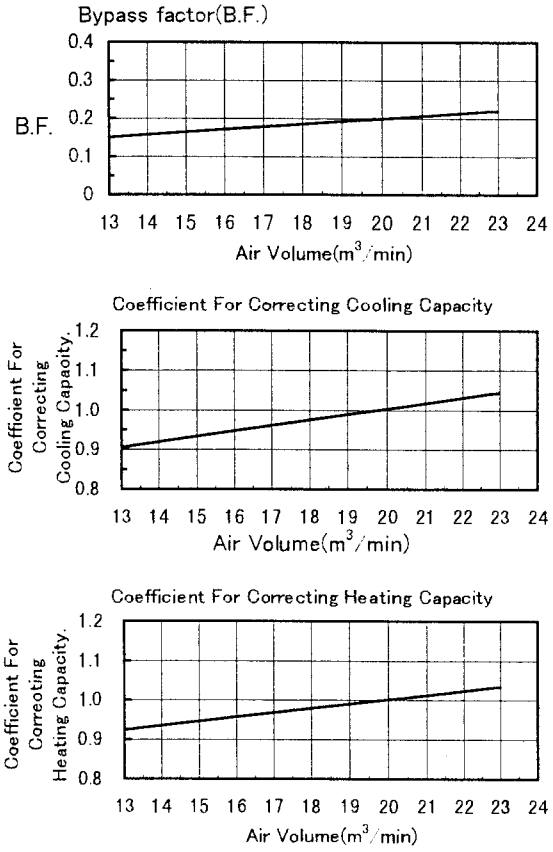
Model		CS-160E96JP					
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	1.40	0.32	99.4	1340	45
	59Pa(6mmAq)	Me	1.18	0.27	99.5	1230	40
	49Pa(5mmAq)	Lo	1.02	0.23	98.0	1100	35
L	49Pa(5mmAq)	Hi	1.31	0.30	99.6	1260	45
	39Pa(4mmAq)	Me	1.09	0.25	99.7	1120	40
	29Pa(3mmAq)	Lo	0.93	0.21	98.2	980	35

●CS-71E96JP

Fan Performance Curve

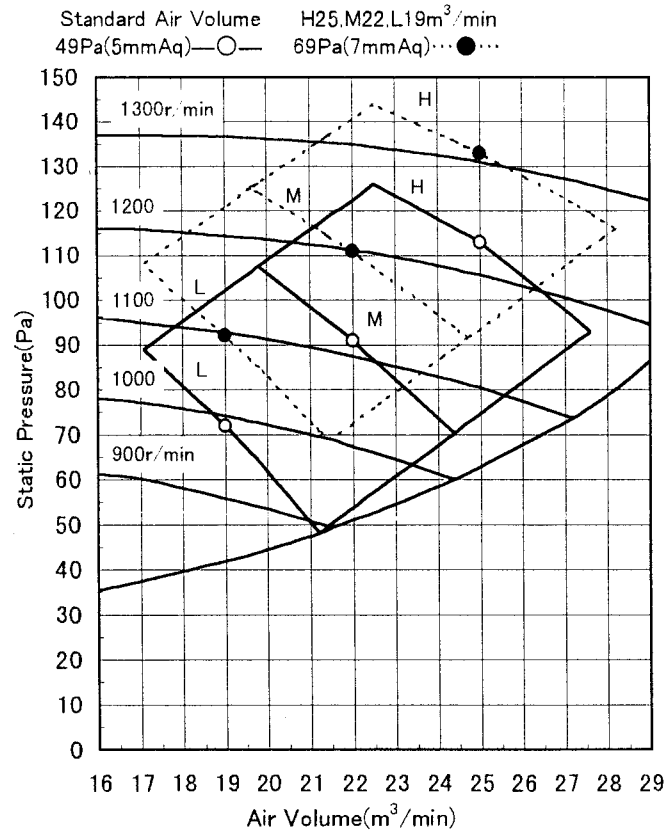


Bypass factor And Coefficient For Correcting Capacity acccrding to Air volume Change

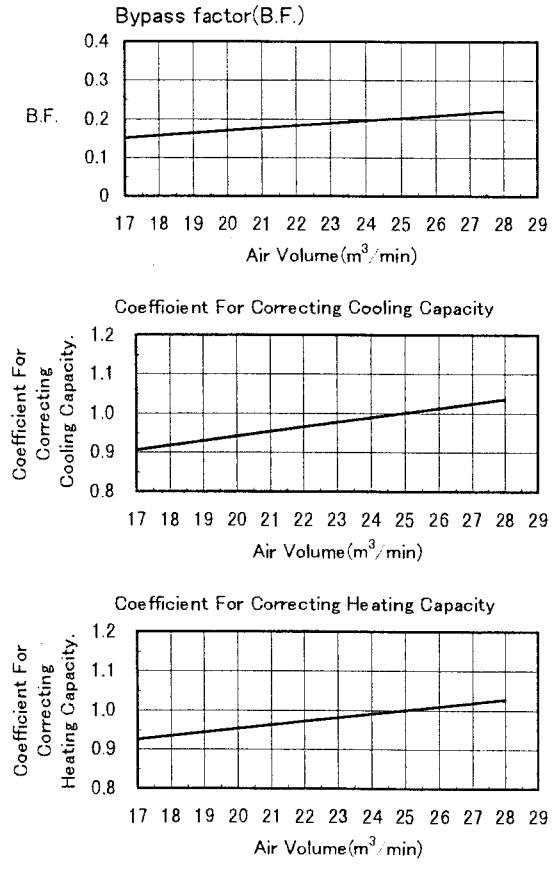


●CS-80E96JP

Fan Performance Curve

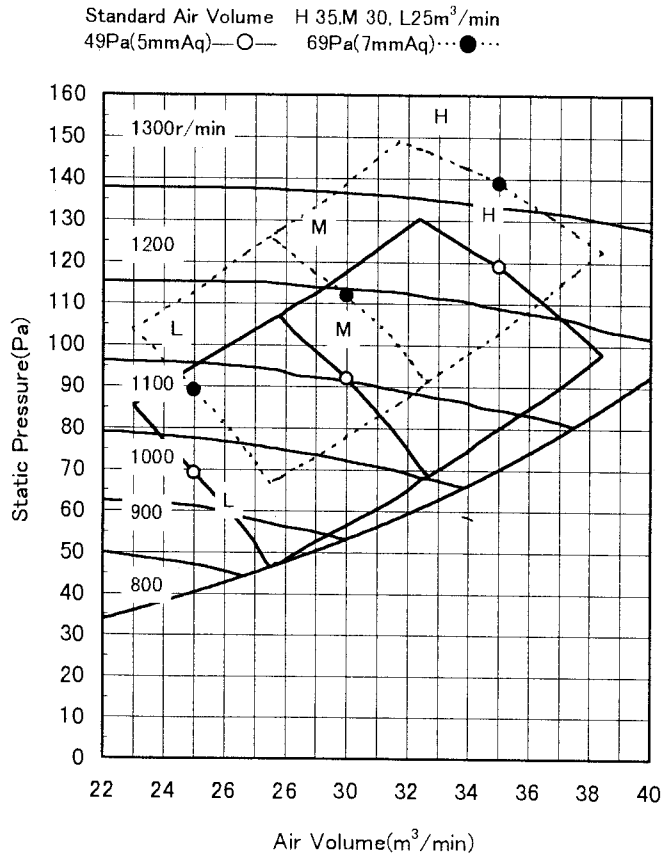


Bypass factor And Coefficient Fcr Correcting Capacity according to Air volume Change

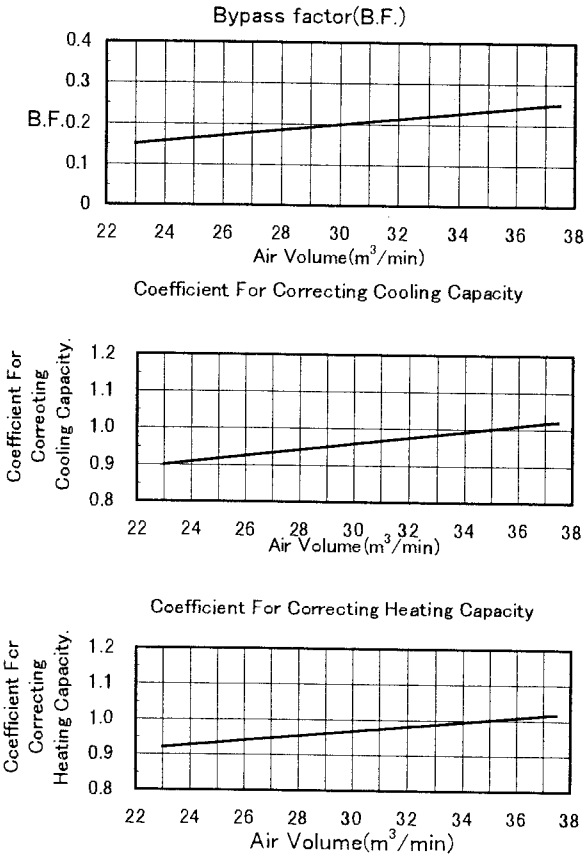


●CS-112E96JP

Fan Performance Curve

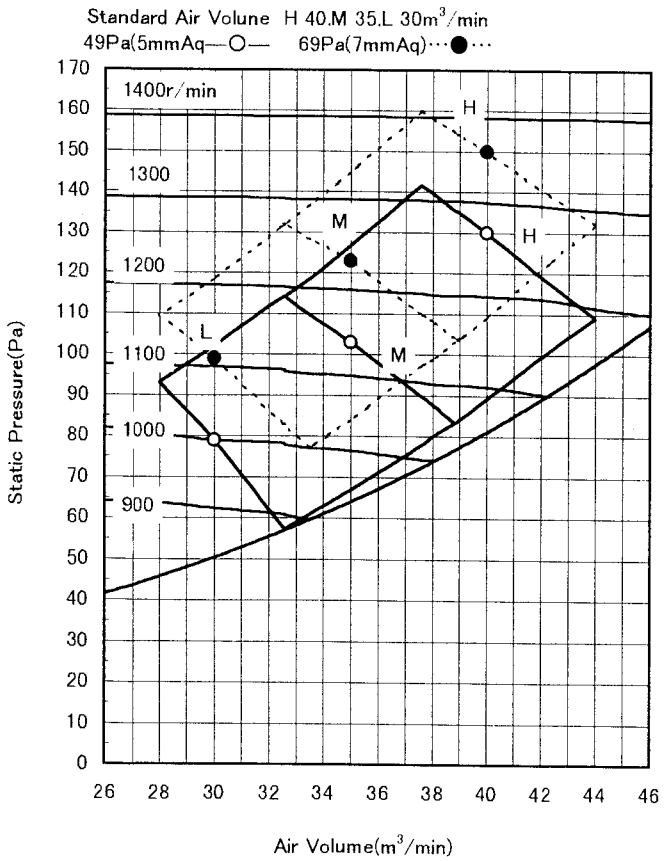


Bypass factor And Coefficient For Correcting Capacity according to Air volume Change

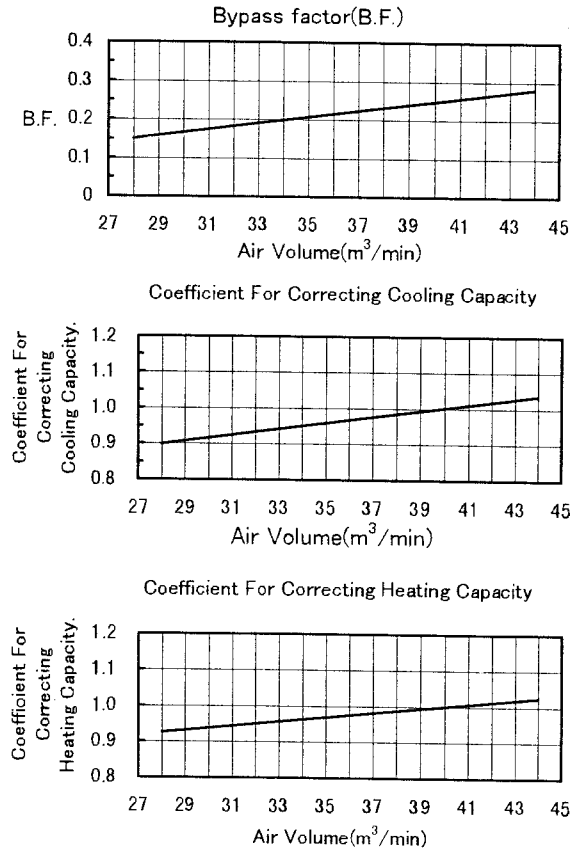


●CS-140E96JP

Fan Performance Curve

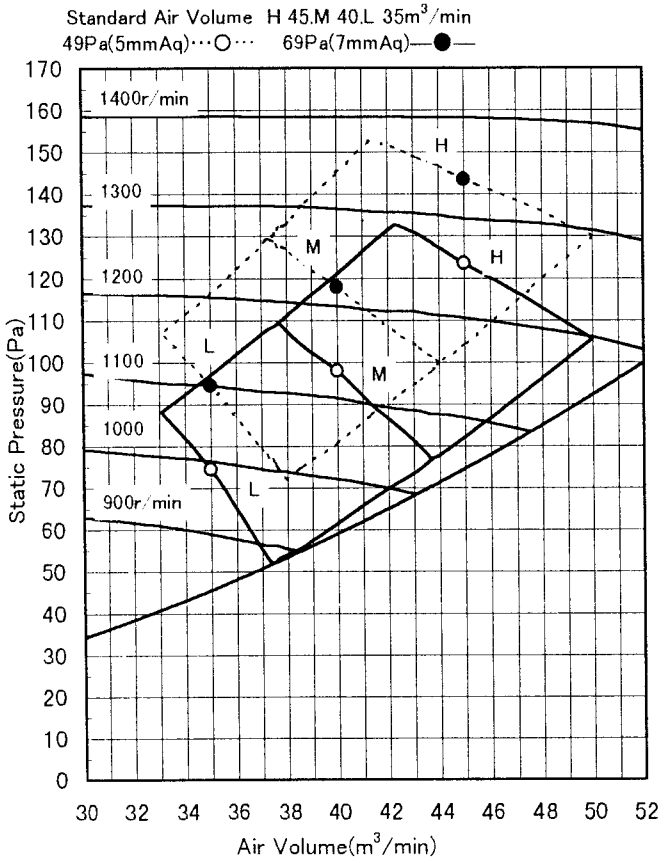


Bypass factor And Coefficient For Correcting Capacity according to Air volume Change

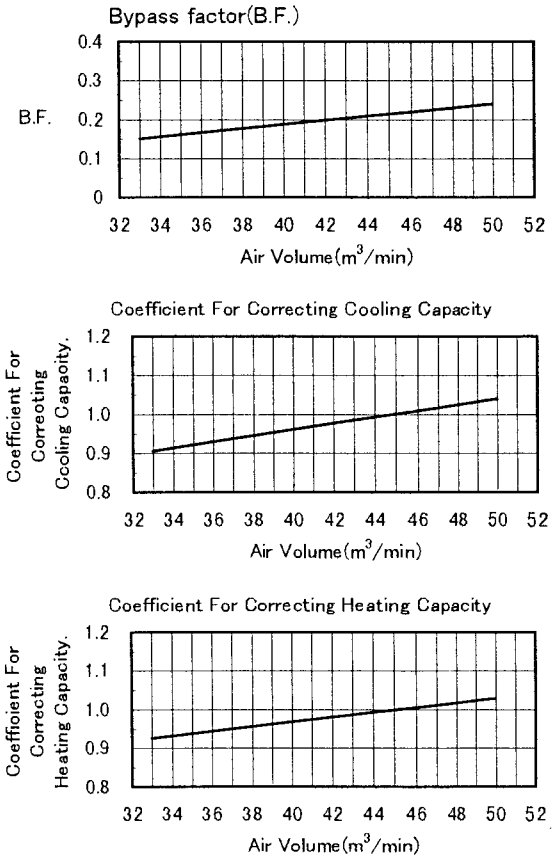


● CS-160E96JP

Fan Performance Curve



Bypass factor And Coefficient For Correcting Capacity according to Air volume Change



Indoor unit		Model	CS-71E96JP	CS-71E96JP	CS-60E96JP	CS-80E96JP	CS-112E96JP	CS-140E96JP	CS-160E96JP
For fan motor protection									
Internal	OFF	℃	135	135	135	135	135	135	135
protector(49F)	ON	℃	67	87	87	87	87	87	67
For control proteotion									
Fuse	CUT	A	3.15	3.15	3.15	3.15	3.15	3.15	15

Outdoor unit	Heat pump model	Model	CU-71C52HP	CU-71C52XP	CU-80C52HP	CU-80C52XP	CU-112C52XP	CU-140C53XP	CU-160C53XP
	Cooling only model		CU-7102HP	CU-71C02XP	CU-80C02HP	CU-80C02XP	CU-112C02XP	CU-140C03P	CU-160C03XP
For refrigerant oycle									
High pressure	OFF	※MPa	3.0	3.0	3.0	3.0	3.0	3.0	3.0
switoh(63Hi)	ON	※MPa	2.5	2.5	2.5	2.5	2.5	2.5	2.5
For oompressor Over ourrent protection									
Over ourrent	OFF	A	19	19	19	19	19	19	19
proteoter(CT)	RESET	—	Automatic	Automatic	Autcmatic	Automatic	Automatio	Automatic	Automatic
Disoharge temp. protection									
Disoharge temperature thermistor(Th1)	Cmpressor OFF	℃	115	115	115	115	120	120	120
Disoharge temp. protection									
Disoharge temperature	Magntic valve ON	℃	100	100	100	115	100	100	100
thermistor(Th1)	Magntic valve OFF	℃	70	70	70	100	70	70	70
Liquid oompress protection									
Crankoase heater	—	W	37	37	37	37	37	41	41
Internal protectior									
wind	OFF	℃	170	—	165	—	135	120	120
temperature	ON	℃	110	—	102	—	61	52	61
Trip time					10~20sec(50A)		3~10sec(40A)	3~10sec(50A)	3~10sec(58A)
For fan motor protection									
Internal	OFF	℃	135	135	135	135	135	135	135
proteotor(49F)	ON	℃	66	86	86	86	86	86	86
Heating control (Heat pump model only)									
Pressure switch	OFF	※MPa	2.35	2.35	2.35	2.35	2.35	2.35	2.35
(Fan speed)(63H2)	ON	※MPa	1.96	1.96	1.96	1.96	1.96	1.96	1.96
Cooling control									
Heat exohanger outlet temp thermistor(TH2)	Control method		TH≧30℃—High speed TH<30℃—5 speed step control						
For oontrol protection									
Fuse	CUT	A	10	10	10	10	10	10	10

Compressor

Unit Model (Heat punp model)			CU-71C52HP	CU-71C52XP	CU-80C52HP	CU-80C52XP	CU-112C52XP	CU-140C53XP	CU-160C53XP
Unit Model (Cooling only model)			CU-71C02HP	CU-71C02XP	CU-80C02HP	CU-80C02XP	CU-112C02XP	CU-140C03XP	CU-160C03XP
Compressor Model			NH-41VND	NH-41YDA	NH-44VND	NH-44YDA	ZR-45KC-TFD	NM-S0502HV5	JT170BC-YE
Compressor Type			ROTARY					SCROLL	
No.of Cylinders			1	1	1	1	1	1	1
Revolution	50Hz	rpm	2,900	2,900	2,900	2,900	2,900	2,900	2,900
Piston Displacement	50Hz	K/h	7.27	7.27	7.73	7.73	10.73	13.95	15.31
Motor Type									
Starting Method									
Rated Output		kW	1.9	1.9	2.0	2.0	2.8	3.75	4.5
Poles			2	2	2	2	2	2	2
Insulatcn Class			E	E	E	E	E	E	E
Oli Type		*	DIAMOND M.S32(N-1)				SONTEX 200LT	SUNISO 4GDI-HT	SUNISO 4GSDID-K
Charge			1.3	1.3	1.3	1.3	1.24	1.8	1.6

Evaporator

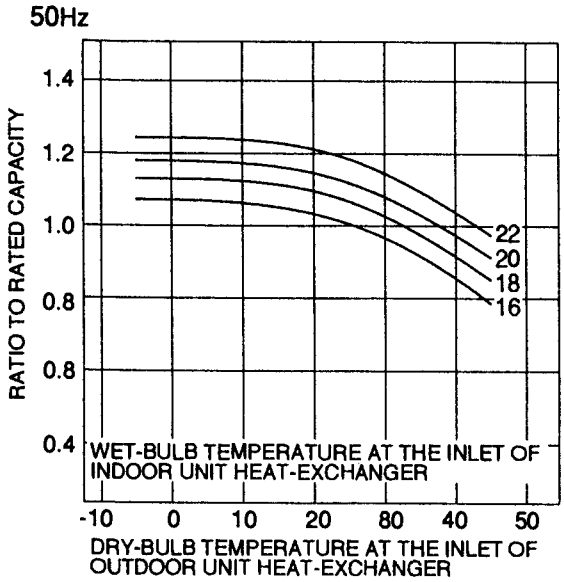
Models(Cooling only Model)		CS-71E96JP	CS-71E96JP	CS-80E96JP	CS-80E96JP	CS-112E96JP	CS-140E96JP	CS-160E96JP
Tube Material		Copper tube						
Outer Diameter	mm	9.53	9.53	9.53	9.53	9.53	9.53	9.53
Thickness	mm	0.28	0.28	0.28	0.28	0.3	0.28	0.28
Row		3	3	3	3	2	3	3
No.of Tubes/Row		10	10	10	10	10	10	10
Fin Material		Aluminium						
Thickness	mm	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Fin Pitch	No./inch	14	14	14	14	14	12	12
Fin Surface		Louver-fin	Louver-fin	Louver-fin	Louver-fin	Louver-fin	Louver-fin	Louver-fin
Total Face Area	G	0.218	0.218	0.218	0.218	0.345	0.345	0.345
Evaporator Fan		Sirocco Fan						
Type								
No./Unit		2	2	2	2	2	2	2
Evaporator Fan Motor		Direct On-Line Starting						
Starting Method								
Rated Output	kW	0.085	0.085	0.115	0.115	0.15	0.26	0.30
Poles		4	4	4	4	4	4	4
Phase		Single-Phase	Single-Phase	Single-Phase	Single-Phase	Single-Phase	Single-Phase	Single-Phase
Insulation Class		E	E	E	E	E	E	E

Condenser

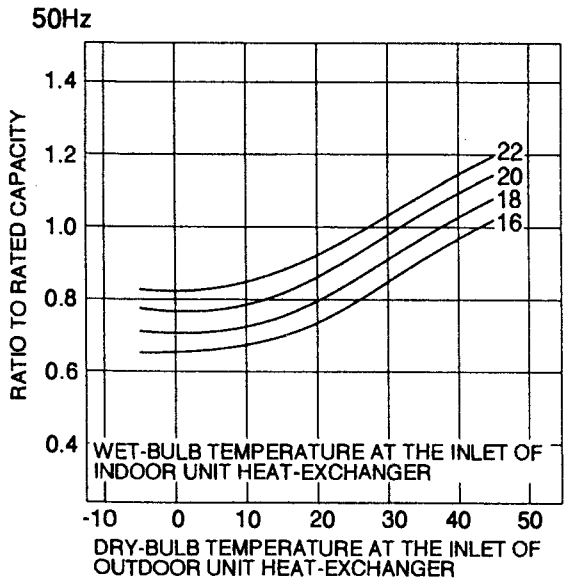
Models (Heat punp model)		CU-71C52HP	CU-71C52XP	CU-80C52HP	CU-71C52XP	CU-112C52XP	CU-140CT53XP	CU-160C53XP
Models (Cooling only model)		CU-71C02HP	CU-71C02XP	CU-80C02HP	CU-80C02XP	CU-112C02XP	CU-140C03XP	CU-160C03XP
Tube Material		Copper tube						
Outer Diameter	mm	9.52	9.52	9.52	9.52	9.52	9.52	9.52
Thickness	mm	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Row		2	2	2	2	2	2	2
No.of Tubes/Row		34	34	34	34	46	46	46
Fin Material		Aluminium						
Thickness	mm	0.105	0.105	0.105	0.105	0.105	0.105	0.105
Fin Pitch	No./inch	12	12	14	14	12	14	14
Fin Surface		AX-Louver fin	AX-Louver fin	AX-Louver fin	AX-Louver fin	AX-Louver fin	X-Louver fin	X-Louver fin
Total Face Area	G	0.635	0.635	0.635	0.635	0.859	1.092	1.092
Exaporator Fan		Prop Fan						
Type								
No./Unit		1	1	1	1	2	2	2
Evaporator Fan Motor		Direct On-Line Starting						
Starting Method								
Rated Output	kW	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Poles		6	6	6	6	6	6	6
Phase		Single-Phase	Single-Phase	Single-Phase	Single-Phase	Single-Phase	Single-Phase	Single-Phase
Insulation Class		E	E	E	E	E	E	E

■COOLING CAPACITY CURVE, COOLING POWER CONSUMPTION CURVE

• COOLING CAPACITY CURVE



• COOLING POWER COMSUMPTION CURVE



● RATED COOLING CAPACITY, RATED COOLING POWER CONSUMPTION

MODEL NAME	RATED HEATING STANDARD	
	CAPACITY(kW)	POWER CONSUMPTION(kW)
CS-71E98JP/CU-71C52HP	6.50	2.55
CS-71E98JP/CU-71C52HP	6.50	2.55
CS-80E98JP/CU-80C52HP	7.30	2.70
CS-80E96JP/CU-80C52XP	7.30	2.70
CS-112E96JP/CU-112C52XP	10.45	3.60
CS-140E96JP/CU-140C53XP	13.00	4.65
CS-180E96JP/CU-160C53XP	14.50	5.13
CS-71E96JP/CU-71C02HP	6.50	2.55
CS-71E96JP/CU-71C02XP	6.50	2.55
CS-80E96JP/CU-80C02HP	7.30	2.70
CS-80E96JP/CU-80C02XP	7.30	2.70
CS-112E96JP/CU-112C02XP	10.45	3.60
CS-140E96JP/CU-140C03XP	13.00	4.85
CS-180E96JP/CU-160C03XP	14.50	5.13

• Calculation of actual cooling capacity and power consumption

Example

CS-80E96JP/CU-80C52XP

- Calculation of the actual cooling capacity and power consumption for the following cooling conditions: Indoor temperature of 18°C (wet-bulb temperature) and outdoor temperature of 40°C (dry-bulb temperature).

Calculation method

- Find the cooling capacity ratio and power consumption ratio from the cooling capacity graph and power consumption graph for model CS-80E96JP/CU-80C52XP

① The cooling capacity ratio indicated at the intersection between an outdoor unit heat exchanger inlet air temperature of 40°C on the horizontal axis and an indoor unit heat exchanger inlet temperature of 18°C is 0.92.

② The cooling power consumption ratio from the same intersection on tl power consumption graph is 1.02.

- Thus,

Actual cooling capacity = cooling capacity ratio × rated cooling capacity
=0.92×7.80=7.18 (kW)

Actual cooling power consumption = cooling power consumption ratio × rated power consumption
=1.02×2.70=2.75(kW)

■PERFORMANCE DATE

MODEL

CS-71E96JP/CU-71C52HP,CS-71E96JP/CU-71C02HP,CS-71E96JP/CU-71C52XP,CS-71E96JP/CU-71C02XP

COOLING PERFORMANCE

AMBIENT RETURN AIR		Temperature Air Entering Condenser (℃ D.B.)														
		25℃			30℃			35℃			40℃			45℃		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	6.84	5.98	2.09	6.58	5.88	2.25	6.25	5.76	2.39	5.86	5.51	2.55	5.40	5.07	2.68
	19	7.17	5.19	2.25	6.91	5.13	2.39	6.58	5.01	2.55	6.25	4.88	2.71	5.86	4.68	2.83
	22	7.76	4.02	2.49	7.50	4.02	2.62	7.17	3.98	2.78	6.84	3.93	2.91	6.44	3.82	3.06
25	17	6.80	5.95	2.09	6.54	5.84	2.25	6.21	5.72	2.39	5.82	5.47	2.55	5.36	5.04	2.68
	19	7.12	5.16	2.25	6.86	5.10	2.39	6.54	4.98	2.55	6.21	4.85	2.71	5.82	4.65	2.83
	22	7.72	3.99	2.49	7.46	4.00	2.62	7.12	3.95	2.78	6.80	3.90	2.91	6.41	3.80	3.06
27	17	6.76	5.91	2.09	6.50	5.81	2.25	6.18	5.69	2.39	5.79	5.44	2.55	5.33	5.01	2.68
	19	7.09	5.13	2.25	6.83	5.07	2.39	6.50	4.95	2.55	6.18	4.82	2.71	5.79	4.63	2.83
	22	7.67	3.96	2.49	7.41	3.97	2.62	7.09	3.93	2.78	6.76	3.88	2.91	6.37	3.77	3.06
29	17	6.72	5.88	2.09	6.46	5.78	2.25	6.15	5.66	2.39	5.76	5.41	2.55	5.30	4.98	2.68
	19	7.05	5.10	2.25	6.79	5.05	2.39	6.46	4.92	2.55	6.15	4.79	2.71	5.76	4.60	2.83
	22	7.63	3.95	2.49	7.37	3.95	2.62	7.05	3.91	2.78	6.72	3.86	2.91	6.33	3.75	3.06
32	17	6.67	5.83	2.09	6.42	5.73	2.25	6.09	5.61	2.39	5.71	5.37	2.55	5.26	4.94	2.68
	19	6.99	5.06	2.25	6.73	5.00	2.39	6.42	4.89	2.55	6.09	4.76	2.71	5.71	4.57	2.83
	22	7.57	3.91	2.49	7.32	3.92	2.62	6.99	3.88	2.78	6.67	3.82	2.91	6.29	3.73	3.06

Legend:BF Bypass Factor 0.20 SHC Sensible Heat Capacity TC Total Cooling Capacity

CAPACITY SELECTION NOTES

(1)The table abcve is based on unit nominal evaporator airflow, correction factor must therefore be applied for selections away from this condition.

COOLING CORRECTION FACTORS				
EVAP.AIR FLOW m3/min(l/s)	14(233)	17(283)	20(333)	23(383)
SHC Sensible Heat Capacity	0.86	0.93	1	1.08
TC Total Cooling Capacity	0.92	0.96	1	1.05

MODEL

CS-80E96JP/CU-80C52HP,CS-80E96JP/CU-80C02HP,CS-80E96JP/CU-80C52XP,CS-80E96JP/CU-80C02XP

COOLING PERFORMANCE

AMBIENT RETURN AIR		Temperature Air Entering Condenser (℃ D.B.)														
		25℃			30℃			35℃			40℃			45℃		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	7.68	7.08	2.21	7.39	6.95	2.37	7.02	6.80	2.54	6.58	6.38	2.70	6.06	5.87	2.83
	19	8.06	6.17	2.37	7.76	6.10	2.54	7.39	5.94	2.70	7.02	5.79	2.86	6.58	5.54	3.00
	22	8.72	4.82	2.64	8.42	4.82	2.78	8.06	4.76	2.94	7.68	4.69	3.08	7.24	4.56	3.24
25	17	7.64	7.03	2.21	7.35	6.90	2.37	6.97	6.76	2.54	6.53	6.33	2.70	6.02	5.83	2.83
	19	8.00	6.13	2.37	7.71	6.05	2.54	7.35	5.91	2.70	6.97	5.75	2.86	6.53	5.51	3.00
	22	8.67	4.79	2.64	8.37	4.79	2.78	8.00	4.74	2.94	7.64	4.66	3.08	7.20	4.54	3.24
27	17	7.59	7.00	2.21	7.30	6.87	2.37	6.94	6.72	2.54	6.50	6.30	2.70	5.99	5.81	2.83
	19	7.96	6.10	2.37	7.67	6.02	2.54	7.30	5.87	2.70	6.94	5.72	2.86	6.50	5.48	3.00
	22	8.61	4.76	2.64	8.32	4.76	2.78	7.96	4.71	2.94	7.59	4.64	3.08	7.15	4.51	3.24
29	17	7.55	6.96	2.21	7.26	6.83	2.37	6.90	6.69	2.54	6.47	6.27	2.70	5.95	5.77	2.83
	19	7.92	6.06	2.37	7.63	5.99	2.54	7.26	5.84	2.70	6.90	5.69	2.86	6.47	5.45	3.00
	22	8.57	4.74	2.64	8.28	4.74	2.78	7.92	4.68	2.94	7.55	4.61	3.08	7.11	4.48	3.24
32	17	7.50	6.90	2.21	7.21	6.78	2.37	6.84	6.63	2.54	6.41	6.21	2.70	5.91	5.72	2.83
	19	7.85	6.02	2.37	7.56	5.94	2.54	7.21	5.80	2.70	6.84	5.64	2.86	6.41	5.41	3.00
	22	8.50	4.70	2.64	8.22	4.70	2.78	7.85	4.65	2.94	7.50	4.57	3.08	7.06	4.45	3.24

Legend:BF Bypass Factor 0.20 SHC Sensible Heat Capacity TC Total Cooling Capacity

CAPACITY SELECTION NOTES

(1)The table above is based on unit nominal evaporator airflow, correction factor must therefore be applied for selections away from this condition.

COOLING CORRECTION FACTORS				
EVAP.AIR FLOW m3/min(l/s)	19(316)	22(366)	25(416)	28(466)
SHC Sensible Heat Capacity	0.86	0.93	1	1.07
TC Total Cooling Capacity	0.92	0.96	1	1.04

MODEL

CS-112E96JP/CU-112C52XP,CS-112E96JP/CU-112C02XP

COOLING PERFORMANCE

AMBIENT RETURN AIR		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	11.00	9.99	2.95	10.58	9.82	3.17	10.05	9.63	3.38	9.41	9.22	3.60	8.67	8.85	3.78
	19	11.53	8.59	3.17	11.11	8.50	3.38	10.58	8.31	3.60	10.05	8.10	3.82	9.41	7.78	4.00
	22	12.48	6.49	3.53	12.06	6.52	3.71	11.53	6.47	3.92	11.00	6.40	4.11	10.36	6.24	4.32
25	17	10.93	9.93	2.95	10.51	9.76	3.17	9.98	9.58	3.38	9.36	9.16	3.60	8.62	8.79	3.78
	19	11.46	8.53	3.17	11.04	8.44	3.38	10.51	8.26	3.60	9.98	8.05	3.82	9.36	7.74	4.00
	22	12.41	6.46	3.53	11.98	6.47	3.71	11.46	6.43	3.92	10.93	6.36	4.11	10.30	6.20	4.32
27	17	10.87	9.87	2.95	10.45	9.70	3.17	9.93	9.52	3.38	9.30	9.11	3.60	8.57	8.74	3.78
	19	11.39	8.48	3.17	10.97	8.39	3.38	10.45	8.21	3.60	9.93	8.01	3.82	9.30	7.69	4.00
	22	12.33	6.42	3.53	11.91	6.45	3.71	11.39	6.39	3.92	10.87	6.32	4.11	10.24	6.16	4.32
29	17	10.81	9.82	2.95	10.39	9.65	3.17	9.88	9.47	3.38	9.25	9.06	3.60	8.52	8.69	3.78
	19	11.33	8.44	3.17	10.92	8.36	3.38	10.39	8.17	3.60	9.88	7.96	3.82	9.25	7.65	4.00
	22	12.26	6.39	3.53	11.86	6.41	3.71	11.33	6.36	3.92	10.81	6.29	4.11	10.18	6.14	4.32
32	17	10.73	9.74	2.95	10.32	9.58	3.17	9.79	9.39	3.38	9.18	9.00	3.60	8.46	8.63	3.78
	19	11.24	8.37	3.17	10.83	8.29	3.38	10.32	8.10	3.60	9.79	7.90	3.82	9.18	7.59	4.00
	22	12.17	6.33	3.53	11.76	6.36	3.71	11.24	6.31	3.92	10.73	6.24	4.11	10.11	6.09	4.32

Legend:BF Bypass Factor 0.24 SHC Sensible Heat Capacity TC Total Cooling Capacity

CAPACITY SELECTION NOTES

(1)The table above is based on unit nominal evaporator airflow. correction factor must therefore be applied for selections away from this condition.

COOLING CORRECTION FACTORS				
EVAP. AIR FLOW m3/min(l/s)	28(467)	32(533)	35(583)	38(633)
SHC Sensible Heat Capacity	0.91	0.96	1	1.05
TC Total Cooling Capacity	0.94	0.98	1	1.03

CS-140E96JP/CU-140C53XP,CS-140E96JP/CU-140C03XP

COOLING PERFORMANCE

AMBIENT RETURN AIR		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	13.69	11.83	3.98	13.16	11.63	4.27	12.50	11.41	4.56	11.71	10.92	4.85	10.79	10.48	5.10
	19	14.35	10.17	4.27	13.82	10.06	4.56	13.16	9.84	4.85	12.50	9.59	5.14	11.71	9.21	5.39
	22	15.53	7.70	4.75	15.00	7.72	5.00	14.35	7.66	5.29	13.69	7.58	5.53	12.89	7.39	5.82
25	17	13.60	11.75	3.98	13.08	11.56	4.27	12.43	11.34	4.56	11.63	10.85	4.85	10.73	10.42	5.10
	19	14.25	10.10	4.27	13.73	10.00	4.56	13.08	9.78	4.85	12.43	9.53	5.14	11.63	9.15	5.39
	22	15.43	7.64	4.75	14.90	7.67	5.00	14.25	7.61	5.29	13.60	7.53	5.53	12.82	7.34	5.82
27	17	13.52	11.82	3.98	13.00	11.61	4.27	12.35	11.39	4.56	11.57	10.90	4.85	10.66	10.35	5.10
	19	14.17	10.18	4.27	13.65	10.07	4.56	13.00	9.85	4.85	12.35	9.60	5.14	11.57	9.22	5.39
	22	15.34	7.74	4.75	14.82	7.77	5.00	14.17	7.71	5.29	13.52	7.61	5.53	12.74	7.43	5.82
29	17	13.45	11.62	3.98	12.93	11.43	4.27	12.28	11.21	4.56	11.51	10.73	4.85	10.60	10.30	5.10
	19	14.10	10.00	4.27	13.58	9.89	4.56	12.93	9.67	4.85	12.28	9.42	5.14	11.51	9.05	5.39
	22	15.26	7.56	4.75	14.74	7.58	5.00	14.10	7.53	5.29	13.45	7.45	5.53	12.68	7.26	5.82
32	17	13.34	11.53	3.98	12.83	11.34	4.27	12.19	11.13	4.56	11.42	10.65	4.85	10.52	10.22	5.10
	19	13.98	9.91	4.27	13.47	9.81	4.56	12.83	9.59	4.85	12.19	9.35	5.14	11.42	8.99	5.39
	22	14.80	7.50	4.75	14.63	7.53	5.00	13.98	7.47	5.29	13.34	7.39	5.53	12.57	7.20	5.82

Legend:BF Bypass Factor 0.25 SHC Sensible Heat Capacity TC Total Cooling Capacity

CAPACITY SELECTION NOTES

(1)The table above is based on unit nominal evaporator airflow. correction factor must therefore be applied for selections away from this condition.

COOLING CORRECTION FACTORS				
EVAP. AIR FLOW m3/min(l/s)	32(533)	36(600)	40(666)	44(733)
SHC Sensible Heat Capacity	0.91	0.95	1	1.06
TC Total Cooling Capacity	0.94	0.97	1	1.04

14. CAPACITY AND POWER CONSUMPTION

MODEL

CS-160E96JP/CU-160C53XP,CS-160E96JP/CU-160C03XP

COOLING PERFORMANCE

AMBIENT RETURN AIR		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	15.27	13.41	4.42	14.68	13.17	4.74	13.94	12.91	5.06	13.06	12.34	5.39	12.04	11.37	5.66
	19	16.00	11.64	4.74	15.41	11.51	5.06	14.68	11.23	5.39	13.94	10.93	5.72	13.06	10.49	5.98
	22	17.32	9.00	5.28	16.73	9.01	5.55	16.00	8.92	5.88	15.27	8.79	6.14	14.38	8.56	6.47
25	17	15.17	13.33	4.42	14.58	13.09	4.74	13.86	12.83	5.06	12.98	12.26	5.39	11.96	11.30	5.66
	19	15.90	11.56	4.74	15.31	11.43	5.06	14.58	11.16	5.39	13.86	10.86	5.72	12.98	10.42	5.98
	22	17.21	8.95	5.28	16.63	8.96	5.55	15.90	8.86	5.88	15.17	8.74	6.14	14.29	8.50	6.47
27	17	15.08	13.24	4.42	14.50	13.02	4.74	13.78	12.75	5.06	12.91	12.20	5.39	11.89	11.23	5.66
	19	15.81	11.50	4.74	15.23	11.36	5.06	14.50	11.10	5.39	13.78	10.80	5.72	12.91	10.36	5.98
	22	17.11	8.89	5.28	16.53	8.90	5.55	15.81	8.80	5.88	15.08	8.69	6.14	14.21	8.45	6.47
29	17	15.00	13.18	4.42	14.42	12.94	4.74	13.70	12.69	5.06	12.84	12.13	5.39	11.83	11.18	5.66
	19	15.72	11.44	4.74	15.15	11.31	5.06	14.42	11.03	5.39	13.70	10.74	5.72	12.84	10.31	5.98
	22	17.02	8.84	5.28	16.44	8.85	5.55	15.72	8.77	5.88	15.00	8.64	6.14	14.14	8.42	6.47
32	17	14.88	13.07	4.42	14.31	12.84	4.74	13.59	12.58	5.06	12.74	12.04	5.39	11.73	11.08	5.66
	19	15.60	11.35	4.74	15.03	11.21	5.06	14.31	10.95	5.39	13.59	10.66	5.72	12.74	10.23	5.98
	22	16.89	8.78	5.28	16.31	8.79	5.55	15.60	8.69	5.88	14.88	8.58	6.14	14.02	8.34	6.47

Legend:BF Bypass Factor 0.22 SHC Sensible Heat Capacity TC Total Cooling Capacity

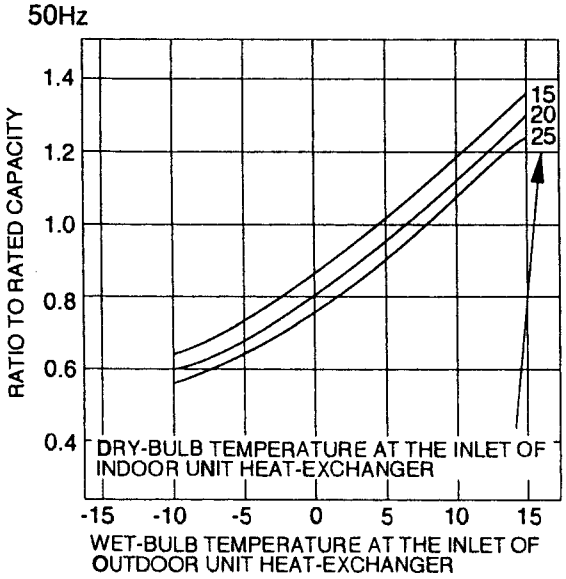
CAPACITY SELECTION NOTES

(1)The table above is based on unit nominal evaporator airflow. correction factor must therefore be applied for selections away from this condition.

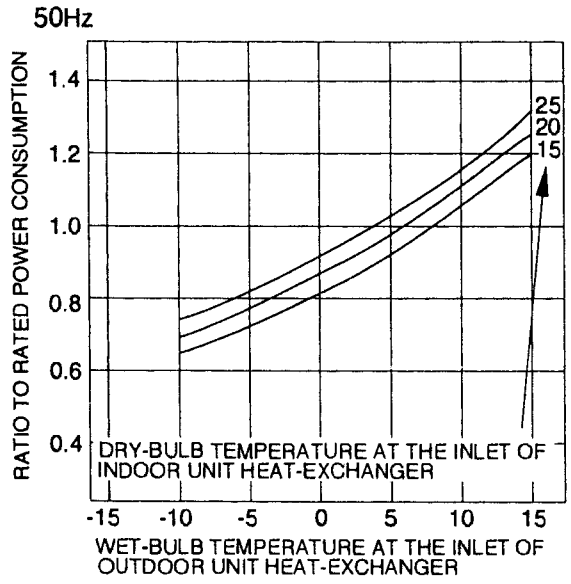
COOLING CORRECTION FACTORS				
EVAP AIR FLOW m3 min(l s)	37(617)	41(683)	45(750)	49(817)
SHC Sensible Heat Capacity	0.9	0.93	1	1.07
TC Total Cooling Capacity	0.94	0.97	1	1.03

■HEATING CAPACITY CURVE, HEATING POWER CONSUMPTION CURVE (HEAT PUMP MODEL ONLY)

• HEATING CAPACITY CURVE



• HEATING POWER CONSUMPTION CURVE



● RATED HEATING CAPACITY, RATED HEATING POWER CONSUMPTION

MODEL NAME	RATED HEATING STANDARD	
	CAPACITY(kW)	POWER CONSUMPTION(kW)
CS-71E96JP/CU-71C52HP	6.95	2.40
CS-71E96JP/CU-71C52XP	6.95	2.40
CS-80E96JP/CU-80C52HP	7.75	2.47
CS-80E96JP/CU-80C52XP	7.75	2.47
CS-112E96JP/CU-112C52XP	11.15	3.42
CS-140E96JP/CU-140C53XP	14.15	4.65
CS-160E96JP/CU-160C53XP	15.70	5.09

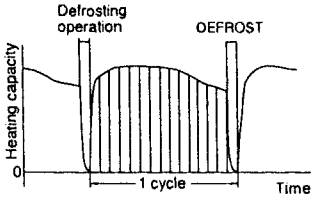
<Precautions on using capacity and electrical characteristics curves>

- Heating capacity when the unit is frosted over or while being defrosted will vary depending on outdoor temperature (°CWB) and the amount of frost. Heating capacity performance must be compensated because it does not take into account the capacity drop incurred when the unit is frosted over and while it is being defrosted. Therefore, to obtain the integral heating capacity in consideration of overfrosting and defrost operations, heating capacity must be multiplied by the compensation coefficient below.

- Heating capacity compensation coefficient for heating in frosted situations

Wet-bulb temperature at inlet of outdoor unit heat exchanger(°CWB)	-10	-8	-6	-4	-2	0	1	2	4	6
Heating capacity compensation coefficient	0.93	0.93	0.92	0.39	0.87	0.86	0.87	0.89	0.95	1.0

※1
Integral heating capacity = (Heating capacity by heating capacity performance) × (Heating capacity compensation coefficient) <kW>

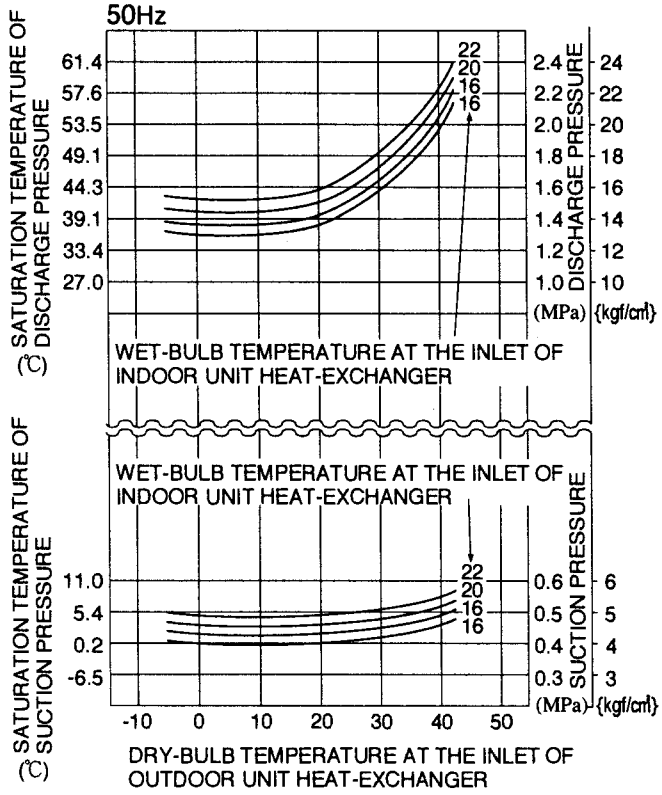


※1
Integral heating capacity is obtained by integrating the capacity consumed in 1 defrost cycle into the normal heating capacity, and calculating this value as an hourly figure. One defrost cycle is determined as the time from when a defrost operation stops (heating starts) until the next heating operation starts (see figure on left).

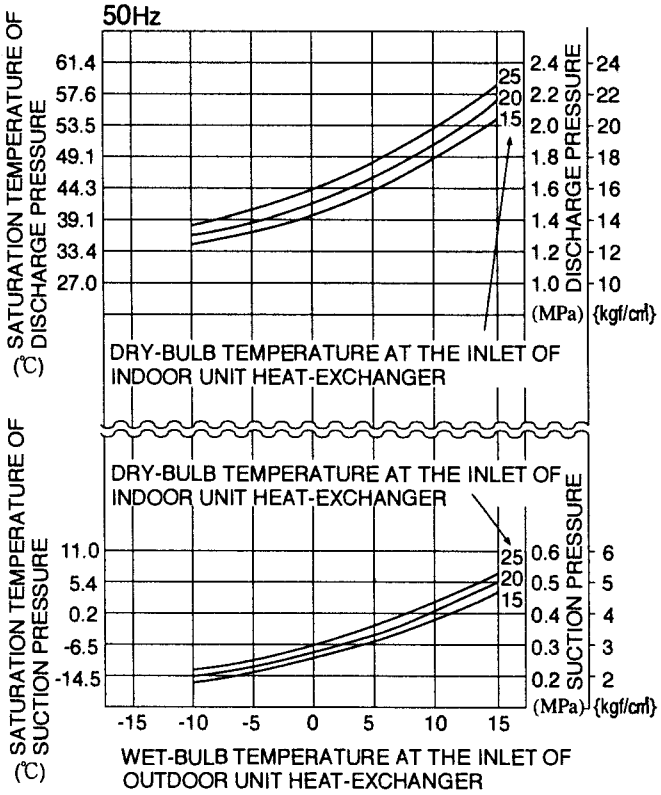
■SATURATION TEMPERATURE OF DISCHAROE AND SUCTION PRESSURE

- **Commonness TO THE ALL MODEL**
- **SATURATION TEMPERATURE OF DISCHARGE AND SUCTION PRESSURE**

COOLING

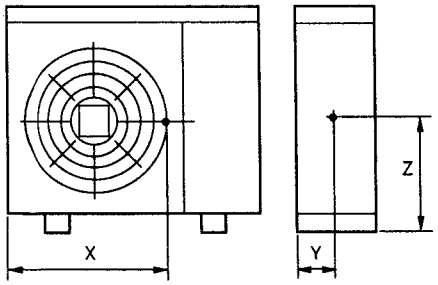


HEATING (Heat pump model only)

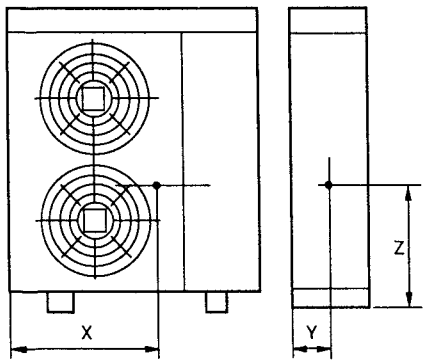


16. POSITION OF THE CENTER GRAVITY

71C~80C



112C~180C

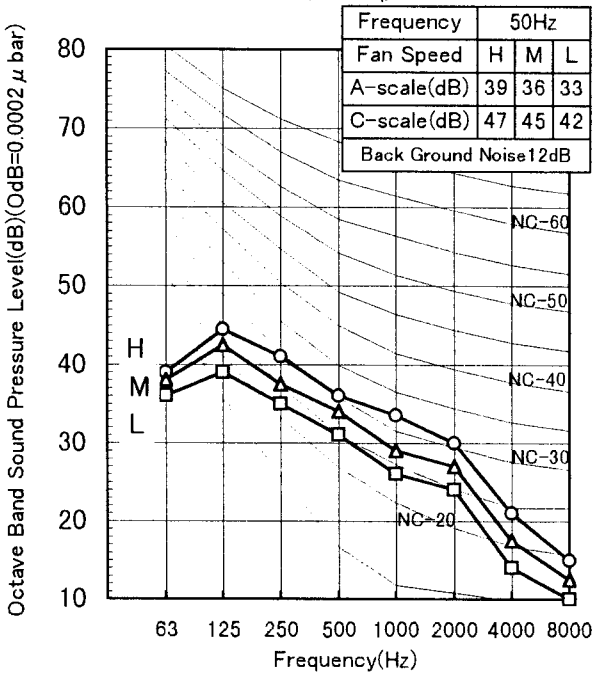


MODEL NAME	OUTSIDE DIMENSIONS			NET WEIGHT	CENTER OF GRAVITY		
	WIDTH	DEPTH	HEIGHT	kg	X	Y	Z
CU-71C52HP	900	320	900	71	560	160	360
CU-71C52XP	900	320	900	71	560	160	360
CU-80C52HP	900	320	900	73	580	160	340
CU-80C52XP	900	320	900	73	580	160	340
CU-112C52XP	900	320	1220	98	590	160	460
CU-140C53XP	1100	320	1220	113	720	160	460
CU-160C53XP	1100	320	1220	118	720	160	460
CU-71C02HP	900	320	900	68	560	160	360
CU-71C02XP	900	320	900	68	560	160	360
CU-80C02HP	900	320	900	70	580	160	340
CU-80C02XP	900	320	900	70	580	160	340
CU-112C02XP	900	320	1220	95	590	160	460
CU-140C03XP	1100	320	1220	110	720	160	460
CU-160C03XP	1100	320	1220	115	720	160	460

CS-71E96JP
Octave Band Central Frequency(Hz)
External Static Pressure 49Pa(5mmAq)

H ○——○
M △——△
L □——□

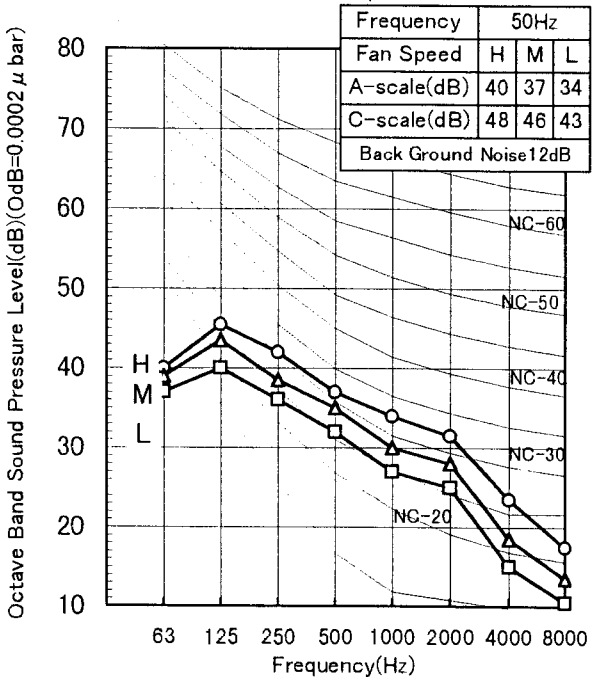
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	39	36	33
C-scale(dB)	47	45	42
Back Ground Noise12dB			



CS-71E96JP
Octave Band Central Frequency(Hz)
External Static Pressure69Pa(7mmAq)

H ○——○
M △——△
L □——□

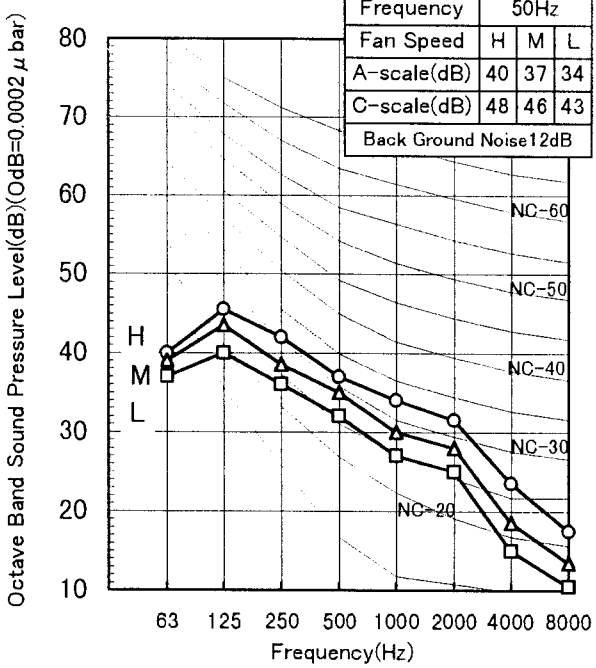
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	40	37	34
C-scale(dB)	48	46	43
Back Ground Noise12dB			



CS-80E96JP
Octave Band Central Frequency(Hz)
External Static Pressure 49Pa(5mmAq)

H ○——○
M △——△
L □——□

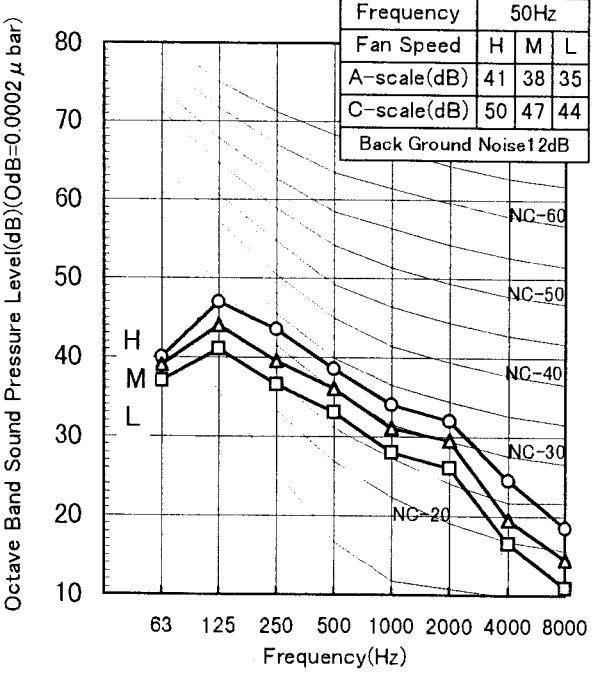
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	40	37	34
C-scale(dB)	48	46	43
Back Ground Noise12dB			

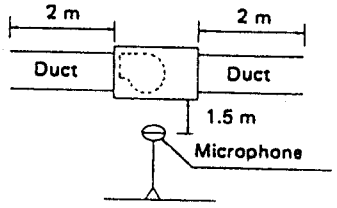


CS-80E96JP
Octave Band Central Frequency(Hz)
External Static Pressure 69Pa(7mmAq)

H ○——○
M △——△
L □——□

Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	41	38	35
C-scale(dB)	50	47	44
Back Ground Noise12dB			

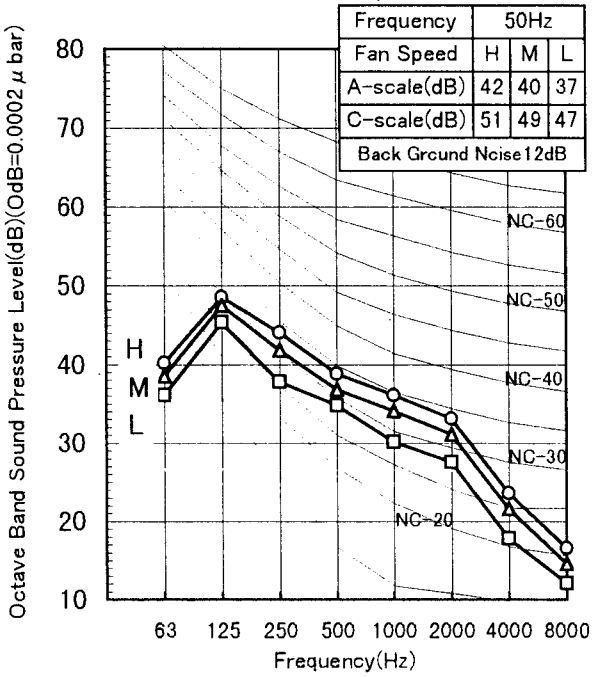




CS-112E96JP
Octave Band Central Frequency(Hz)
External Static Pressure 49Pa(5mmAq)

H ○——○
M △——△
L □——□

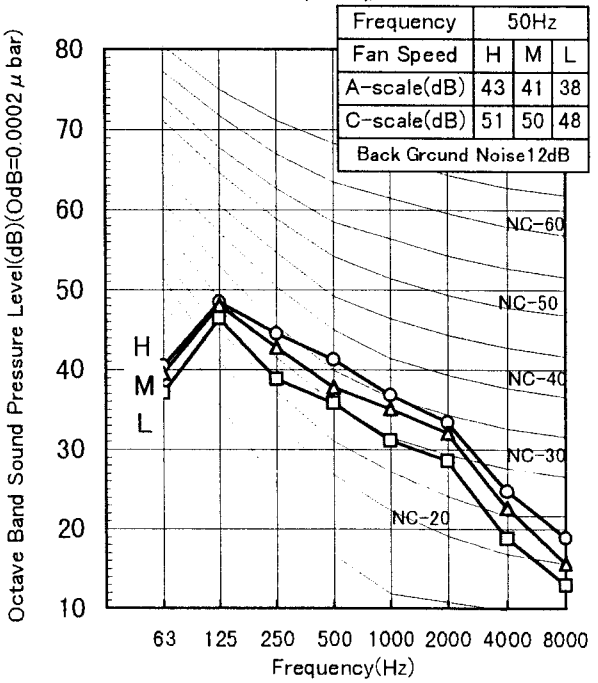
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	42	40	37
C-scale(dB)	51	49	47
Back Grcund Ncise12dB			



CS-112E96JP
Octave Band Central Frequency(Hz)
External Static Pressure69Pa(7mmAq)

H ○——○
M △——△
L □——□

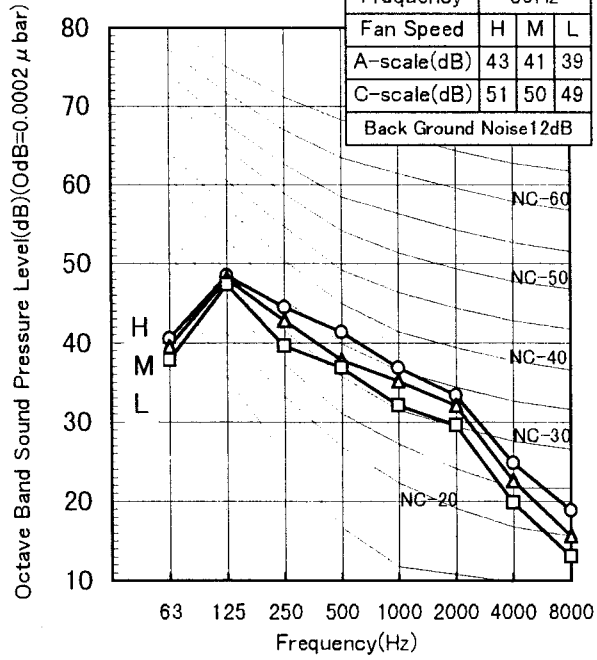
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	43	41	38
C-scale(dB)	51	50	48
Back Grcund Noise12dB			



CS-140E96JP
Octave Band Central Frequency(Hz)
External Static Pressure 49Pa(5mmAq)

H ○——○
M △——△
L □——□

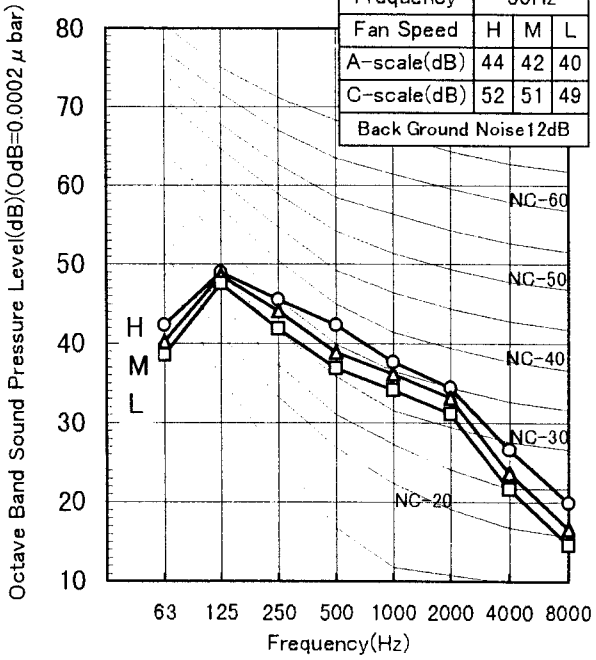
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	43	41	39
C-scale(dB)	51	50	49
Back Ground Noise12dB			



CS-140E96JP
Octave Band Central Frequency(Hz)
External Static Pressure 69Pa(7mmAq)

H ○——○
M △——△
L □——□

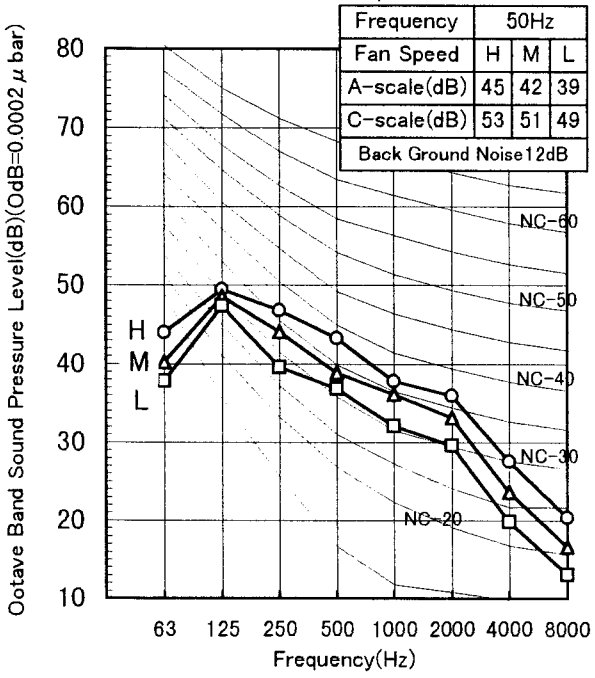
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	44	42	40
C-scale(dB)	52	51	49
Back Ground Noise12dB			



CS-160E96JP
Octave Band Central Frequency(Hz)
External Static Pressure 49Pa(5mmAq)

H ○——○
M △——△
L □——□

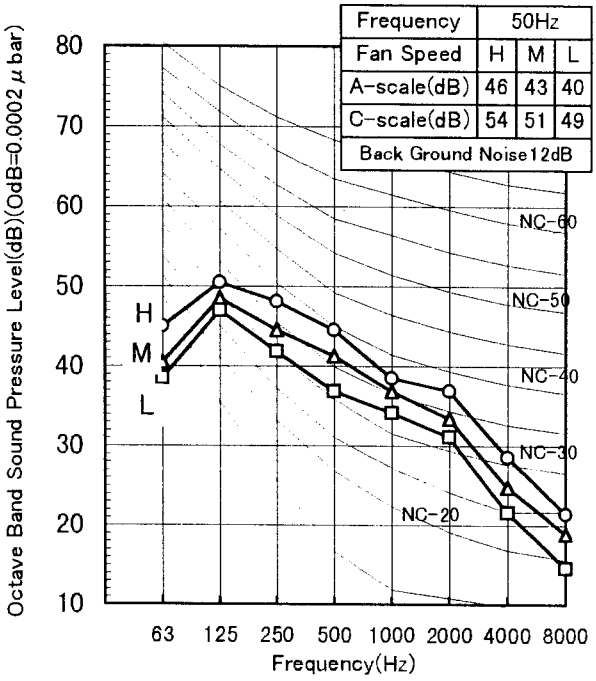
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	45	42	39
C-scale(dB)	53	51	49
Back Ground Noise12dB			



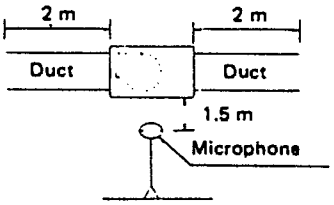
CS-160E96JP
Octave Band Central Frequency(Hz)
External Static Pressure69Pa(7mmAq)

H ○——○
M △——△
L □——□

Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	46	43	40
C-scale(dB)	54	51	49
Back Ground Noise12dB			

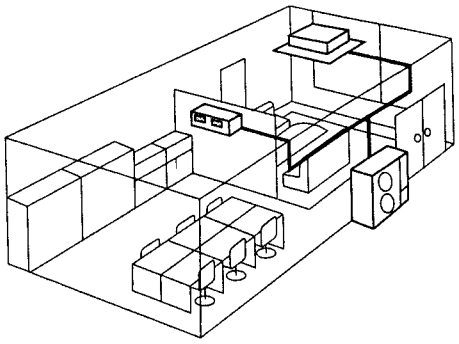


NOTE:
: Microphone Position



Twin
[1] operation

- Simultaneous air conditioning of wide spaces and corners is possible.
- Master units and slave-units can be set automatically in twin and triple systems. No address setting is necessary.
- Multiple indoor units can be operated simultaneously with a single remote control unit. Note that individual operation is not possible.



■Twin and Triple combination table (Capacity ratio)

⬭ : Outdoor unit capacity

▭ : Indoor unit capacity

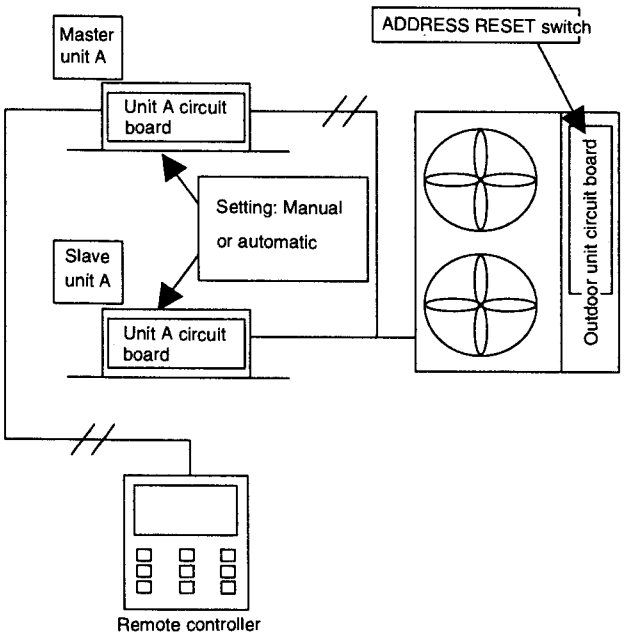
(Figures indicate capacity ratios in combination.)

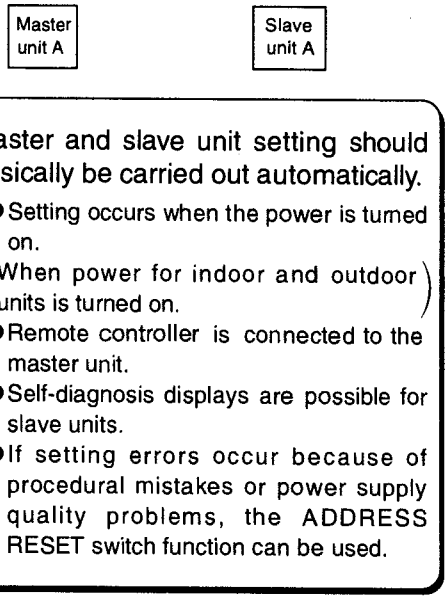
OUT DOOR UNIT	SIMULTANEOUS TWIN OPERATION
	STANDARD
140C	140C 71E 71E
160C	160C 80E 80E

(Twin operation setting)

- The master units and slave units are set automatically when the power is turned on. At this time, the indoor unit which is connected to the remote control unit becomes the master unit.
  (If automatic setting is not possible, carry out the settings manually.)
- Install the remote control unit to the master unit. (It cannot he connected to slave units.)
- The remote control thermostat can also be set.
- Optional circuit boards can only be installed to the master unit.
- Setting the master unit and slave units can also be carried out manually by using DIP switches. However, manual settings will always take priority. If you have made manual settings but would like to return to using automatic settings, set all slave unit DIP switches (refer to the table below) to the OFF position, and then press the ADDRESS RESET switch on the outdoor unit (SW3 on the outdoor unit printed circuit board).
  (Do not mix manual settings and automatic sottings.)

	Master unit	Slave unit
Manual setting	※It is not necessary to operate any switches on the master unit. The unit connected to the remote controller will become the master unit.	 Set No. 8 to ON. All other switches can be ignored. (No. 7 is already set to ON at the time of shipment.)




Master unit A
Slave unit A
Master and slave unit setting should basically be carried out automatically.
● Setting occurs when the power is turned on.
(When power for indoor and outdoor units is turned on.)
● Remote controller is connected to the master unit.
● Self-diagnosis displays are possible for slave units.
● If setting errors occur because of procedural mistakes or power supply quality problems, the ADDRESS RESET switch function can be used.

Automatic address setting for twin systems

Procedure: Turn on the power supply for the indoor and outdoor units.
Operation: Automatic address setting will start 10 to 30 seconds after the power supply is turned on, and will be completed after about 1 minute.

If the power supplies for the indoor unit and outdoor unit cannot be turned on at the same time, turn on the power supply for the outdoor unit, the indoor unit which is connected to the remote controller, and then the other indoor units in that order.

If the order of turning on the power supply is incorrect, the master unit setting may overlap. In such a case, turn on the power supplies for all units in the correct order as given above, or carry out a twin/triple automatic address reset (press dip switch 3 on the outdoor unit continuously for 4 seconds or longer).

- The indoor unit which is connected to the remote control unit (receptor) will have priority for becoming the master unit.
- The master unit thermostat will be used as the indoor temperature thermostat. If the master unit thermostat is turned on, the slave unit thermostats cannot be adjusted even if they happen to be on.
- DIP switch settings take priority in the setting of twin and triple addresses.
- If address setting using the DIP switches is carried out after automatic address setting has been carried out, use DIP switch No. 3 on the outdoor unit to carry out automatic address resetting.
- If you would like to designate a particular indoor unit as the master unit because no master unit has been set, use the DIP switches on the slave units to make the setting.

If automatic address setting is carried out once and then the slave unit addresses are set, the addresses will then be stored inside the EEPROM. Thus it is not necessary to repeat automatic address setting if the power is turned off and back on again.

DIP switch settings fer twin slave unit addresses

Procodure: Turn off the power supply, and then set DIP switch 1-8 to ON.
The unit will become slave unit 1.
Turn on the power supply.

Operation: The unit will operate as slave unit 1. Automatic address setting is not carried out at this time.

If the setting can be made while the power is still turned on, it is easier to mis-combine the setting with group settings. So, the setting be made better while the power is turned off.

- Only slave unit addresses can be set in this way. Master unit setting is not possible.
- If you make the DIP switch settings after the power has been turned back on, carry out twin/triple automatic address resetting.
- Be sure to set DIP switch 1-8 to ON when setting twin/triple addresses. If DIP switch 1-1 is set to ON without setting 1-8 to ON also, group addresses will be set instead, and the remote controller open circuit error code (F26) will be displayed.

Automatic address resetting for twin systems

Function
- This clears the current twin addresses which have been set automatically, and causes automatic twin address setting to be carried out once more.

Procedure: Press the ADDRESS RESET switch SW3 (pushbutton switch) on the outdoor unit circuit board continuously until LEDs 2 to 8 on the outdoor unit circuit board are all illuminated (takes approx. 3.5 seconds).

Operation: The outdoor unit will reset the addresses for the indoor units which it is connected to, and will send an instruction to carry out automatic address setting again. If the indoor unit DIP switches have not been manually set for twin address setting, the indoor units receive this command and they then clear their existing settings and carry out automatic address setting.

If an indoor unit has had its address set by the DIP switch (DIP switch 1-8 is ON), or if the remote control unit is connected to one of the indoor units, then the addresses for those indoor units cannot be reset.

- The indoor units will not run for approximately 1 minute while automatic twin address resetting is being carried out.
- Do not turn off the power supply for at least 1 minute after automatic twin address resetting has been carried out.

2 Piping connections

● The following table shows the pipe diameters for a twin-type system.
(The CZ-06BKDA branch pipe [sold separately] will be needed.)

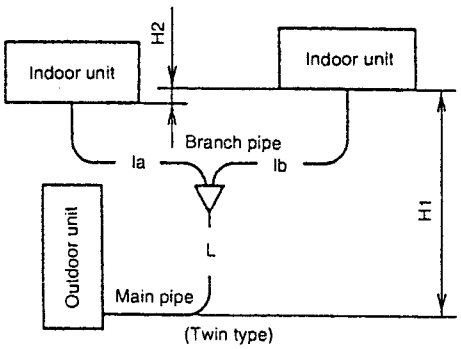
Outdoor unit main pipe diameter (mm)			Indoor unit combinations	
140C	Indoor unit capacity		71E	71E
Liquid side: φ9.52	Branch pipe diameter	Liquid side	φ6.35	φ6.35
Gas side: φ19.05		Gas side	φ15.68	φ15.88
160C	Indoor unit capacity		80E	80E
Liquid side: φ9.52	Branch pipe diameter	Liquid side	φ9.52	φ9.52
Gas side: φ19.05		Gas side	φ15.88	φ15.88

● The following table shows the equivalent pipe lengths and height differences for twin- and triple-type systems.

Equivalent length	L + la + lb				Within 50 m
Branch pipe diameter	la, lb				Within 15 m
Branch pipe difference	la - lb				Within 10 m
Height difference	H1	Within 30 m	Height difference between indoor units	H2	Within 1 m

NOTE:

1. Use the main pipe to gain any rise or fall required for the pipes.
2. The number of bends should be 6 or less in a single system (L + la, L + lb, L + lc), and 15 or less overall.
3. Branch pipes should be positioned horizontally.

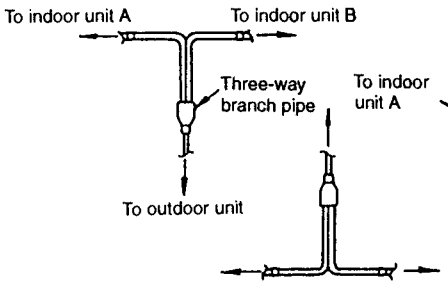


※The branch pipe should be horizontal to or perpendicular to the indoor unit.

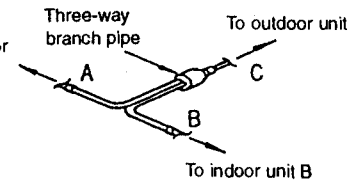
NOTE:

1. Use the main pipe to gain any rise or fall required for the pipes.
2. The number of bends should be 8 or less in a single system (L + la, L + lb, L + lc), and 15 or less overall.
3. Branch pipes should be positioned horizontally.

•The branch pipe should be horizontal to or perpendicular to the indoor unit.



Vertical installation

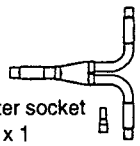
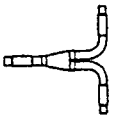


*A, B and C should be horizontal.

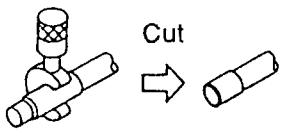
Horizontal installation

• Instailing branch pipes

• Table of parts (option)

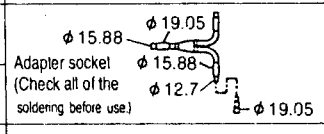
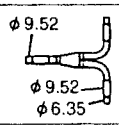
Kit name	Gas-side branch pipe	Liquid-side branch pipe	Insulator (gas side)	Insulator (liquid side)
CZ-06BKDA Twin type (80-160 models)			Ivory x 1 (Polyethylene foam)	White x 1 (Styrene foam)

1. Check the dimensions of the branch pipe (inner diameter) in the pipe compatibility table below in accordance with the outdoor unit-side and indoor unit-side pipe diameters (outer diameters).
   If "Cut" is given, use a pipe cutter to cut the pipe as shown in the illustration at right.
2. Connect the branch pipe to the other pipes and check the soldering all around the connections to make sure that no refrigerant is leaking.



• Cut using a pipe cutter.

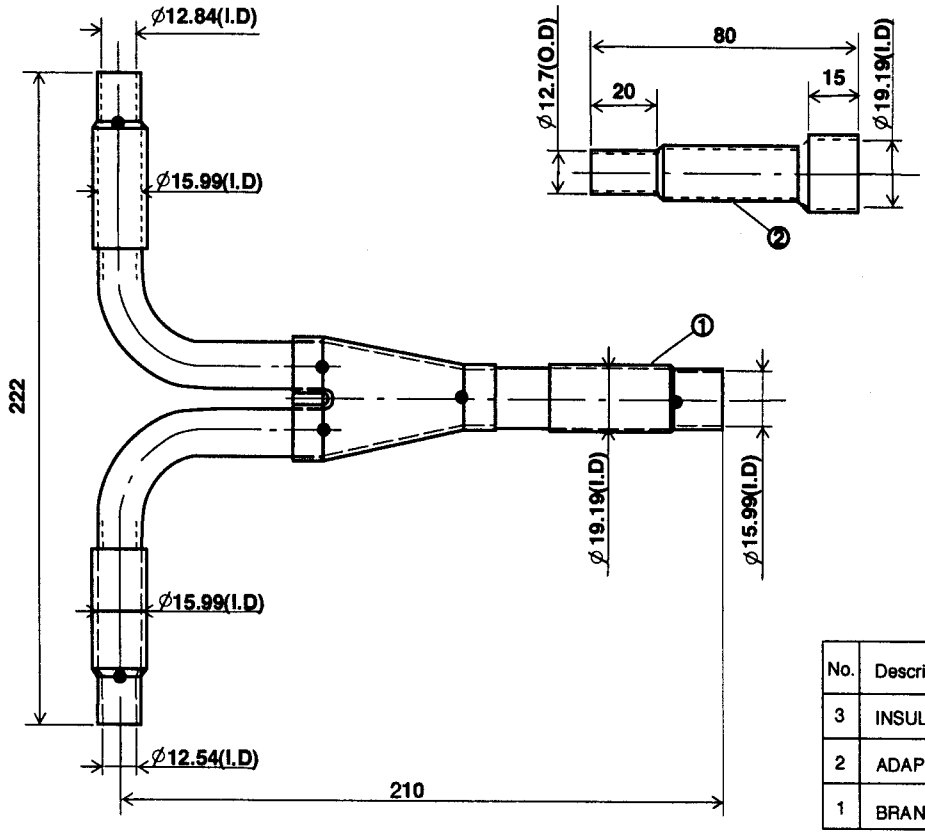
• Branch pipe diameter compatibility table

Part No.		Outdoor unit side (outer diameter)		Branch pipe (inner diameter)	Indoor unit side (outer diameter)	
CZ-06BKDA	Gas side	ϕ15.88	——		ϕ12.7	——
					ϕ15.88	Cut
		ϕ19.05	Cut		ϕ19.05	Adapter socket
	Liquid side	ϕ9.52	——		ϕ6.35	——
					ϕ9.52	Cut

● BRANCH PIPE KIT FOR TWIN TYPE CZ-06BKDA

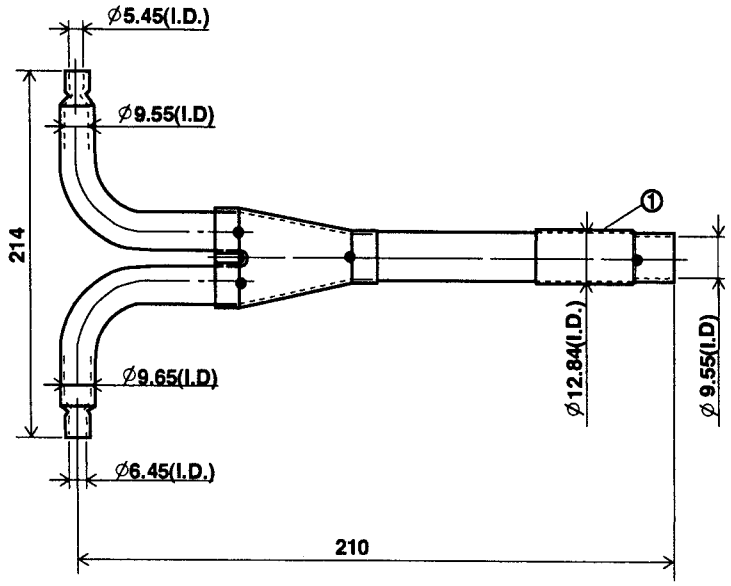
APPLICABLE MODEL · · · CU-112C52XP, CU-140C53XP, CU-160C53XP

■ GAS PIPE



No.	Description	O'ty
3	INSULATION MATERIAL	1
2	ADAPTOR (5/8→4/8,6/8)	1
1	BRANCH PIPE (OAS)	1

■ Liquid pipe



No.	Description	O'ty
2	INSULATION MATERIAL	1
1	BRANCH PIPE (LIQUID)	1

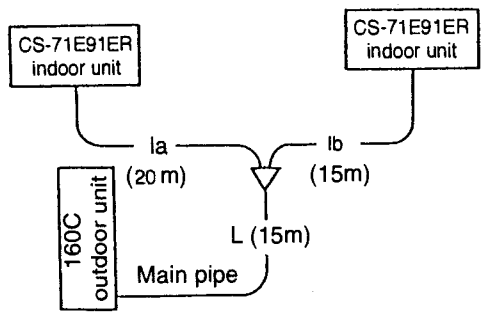
[3] Refrigerant charging

● For twin- and triple-type systems

The pipe length is the total of the branch pipe (L) and the junction pipes (la → lb → lc in order from the thickest diameter)). At the point where the pipe length exceeds 30 m, determine the amount of refrigerant for the remaining liquid-side pipe diameters and pipe lengths from the following table in order to charge the system.

Liquid-side pipo diamoter	ϕ6.35	ϕ9.52
Additional charging amount (kg/m)	0.02	0.05

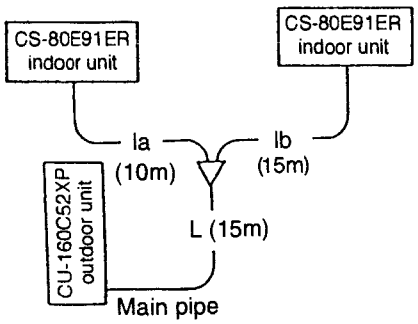
Example 1: For 160C outdoor unit with an equivalent pipe length of 50 m



(Triple type)

		Liquid pipe diameter	Equivalent length	Additional charging amount for each pipe(kg)
Main pepe(L)		9.52	15m	Not needed if within 30m
Main pipe	(la)	6.35	20m	If exceeds 30 m, 5m×0.02=0.1
	(lb)	6.35	15m	If exceeds 30 m, 15m×0.02=0.3
———			50m	Total 0.4 kg

Example 2: For 160C outdoor unit with an equivalent pipe length of 40 m

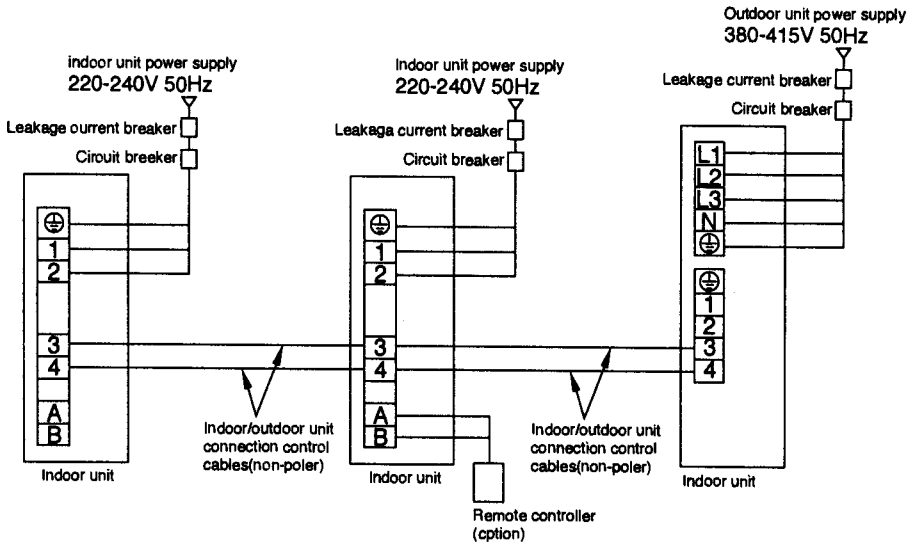


(Twin type)

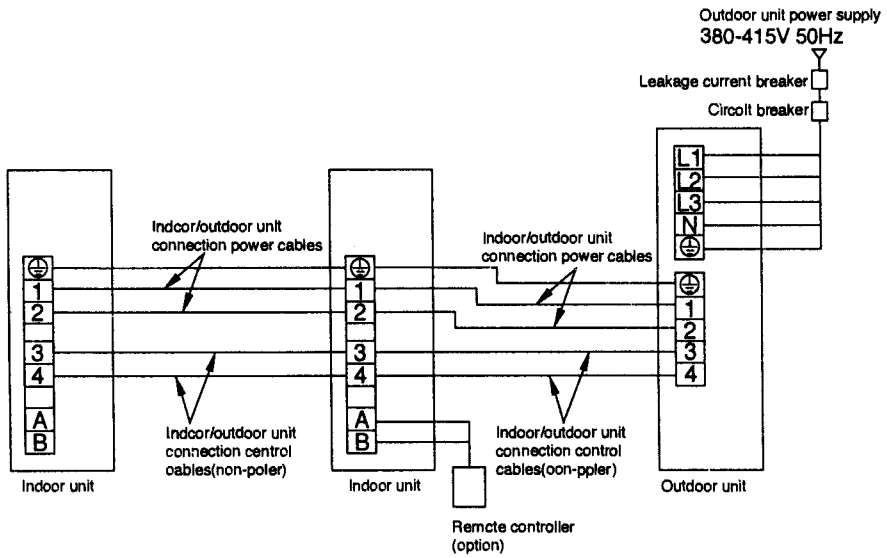
		Liquid pipe diameter	Equivalent length	Additional charging amount for each pipe(kg)
Main pepe(L)		9.52	15m	Not needed if within 30m
Main pipe	(la)	9.52	10m	Not needed if within 30m
	(lb)	9.52	15m	If exeeds 30 m, 10m×0.05=0.5
———			40m	Total 0.5 kg

4 Wiring

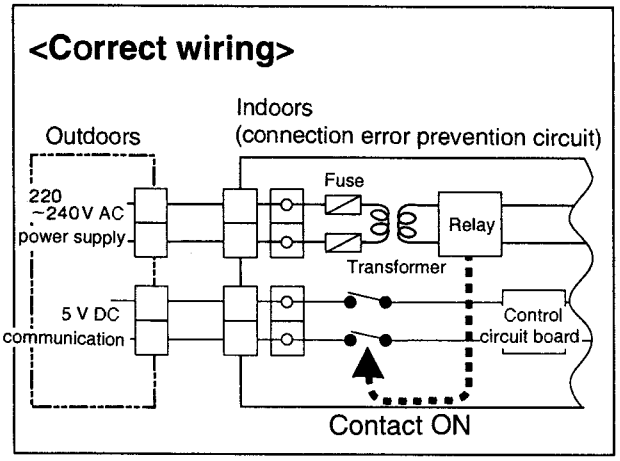
When both indoor and eutdoor unit draw power
(Example: 3 Phase power supply model)

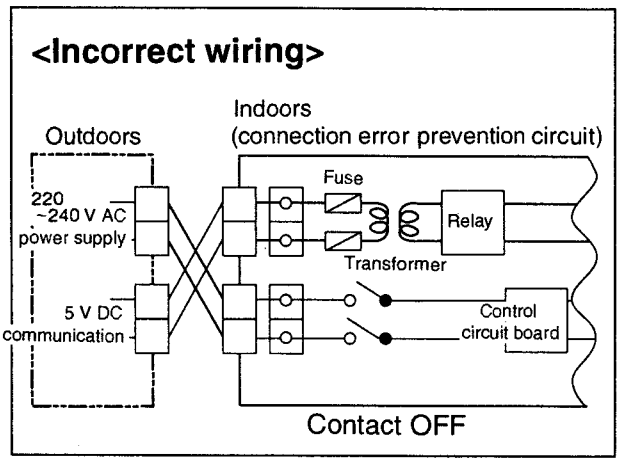


When only the outdoor unit draws power



Improved quality of installation work through adoption of an "Connection error prevention"circuit which prevents wiring mistakes



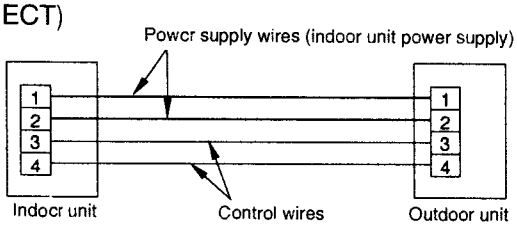


Connection errors with the control wires and the power supply wires will not only contribute to burning-out of the control circuit board, but can also cause large-scale working losses and affect reliability. If a circuit board with an "Connection error prevention" circuit is used, the relay will not operate if the wires have been connected incorrectly, so that current will not flow to the control circuit board. This is designed principally to eliminate human error at the installation site.

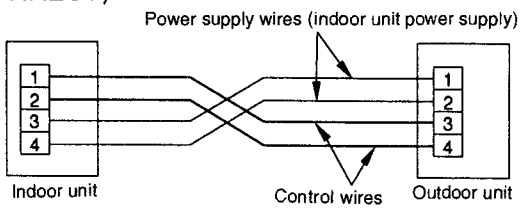
Prevention of connecting errors

These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have operated. In such cases, check that the power supply wires (connected to terminals [1] and [2]) and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.

(CORRECT)



(INCORRECT)



- Do not short the remote controller wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE:

- Wait one minute after turning on the indoor unit power supply before operating the remote controller
- If nothing at all appears in the remote controller LCD, check the power supply for the indoor unit.
  Refer to "TROUBLE SHOOTING" at Page 101~107

NOTE:

Never do any of the following, as doing so may damage the printed circuit board.

- Do not connect anything except a relay to the timer input or fan speed output (connector CNT1 on printed circuit board).
- Do not connect U-NET transmission wires to terminals 3 and 4 of the indoor and outdoor units. (※1)
- Do not connect U-NET transmission wires to terminals A and B of the remote ccntroller

(※1) U-NET transmission wires are the communication wires used for the central controller

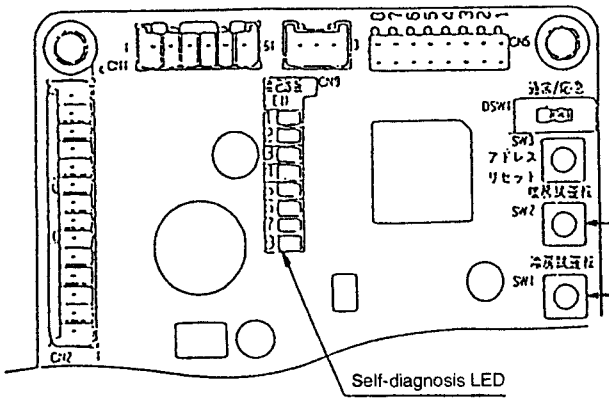
Test operation and self-diagnosis

■ Test operation

- Always be sure to use a properly-insulated tool to operate the switch on the circuit board. (Do not use your finger or a metalic object.)
- Never turn on the power supply until all installation work has been completed.
- Turn on the circuit breaker before test operation extends past 6 hours.
  (The crankcase heater will become energized, which will warm the compressor and prevent liquid compression.)
- For three-phase models, check that the phase is not reversed.
  (If the phase is reversed, the LED on the printed circuit board will flash.)
- Check that the voltage is 198 V or higher when starting the unit. (The unit will not operate if the voltage is less than 198 V.)
- Carry out test operation for 5 minutes or more using the remote oontroller or the switch on the outdoor unit printed circuit board.
- Always carry out cooling first during test operation, even during the warm season.
  (If heating is carried out first, problems with operation of the compressor will result.)

● Test operation from the outdoor unit

(Outdoor unit printed circuit board)



<Heating operation>
- Press the HEAT test operation switch for 1 second.
  The LEDs on the printed circuit board will flash as indicated in the table below.

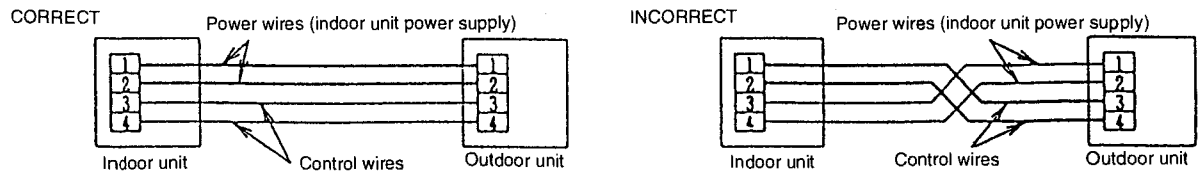
<Cooling operation>
- Press the COOL test operation switch for 1 second.
  The LEDs on the printed circuit board will flash as indicated in the table below.

During outdoor unit emergency operation or test operation, the LEDs on the printed circuit board will flash.

	LEDs on outdoor unit printed circuit board						
	LED2	LED3	LED4	LED5	LED6	LED7	LED8
Emergency operation display			☼	☼	☼		
Cooling test operation from outdoor unit	☼	☼	☼				
Heating test operation from outdoor unit					☼	☼	☼

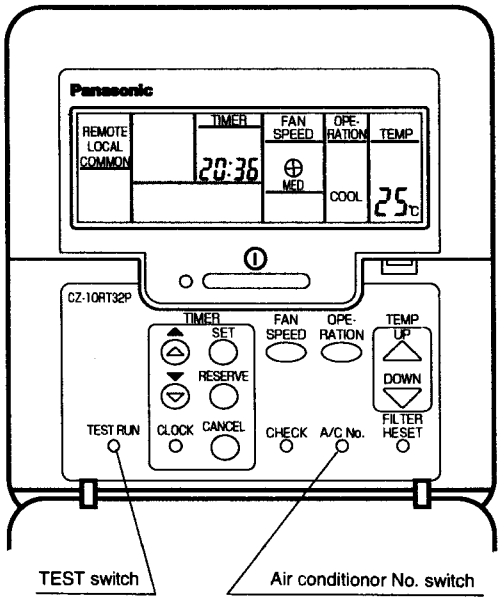
To cancel test operation, press the TEST or RUN switch once more while test operation is being carried out.
(Test operation will stop automatically after 30 minutes have passed.)

NOTE:1 These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have operated. In such cases, check that the drive wires (connected to terminals [1] and [2]) and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.



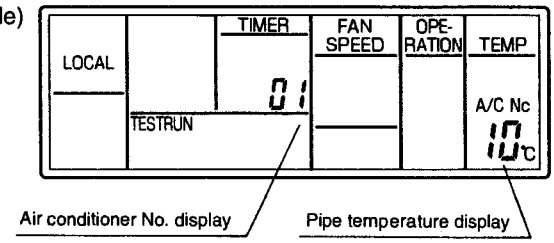
NOTE:2 Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.)
Once the cause of the short is eliminated, normal operation will then be possible.

● Test operation using the wired remote controllor



1. Check that "COOL" is displayed on the operation mode display, and then press the RUN switch to start test operation.
2. Within 1 minute of pressing the RUN switch, press the TEST RUN switch.
3. The pipe temperature (gas pipe) will then be displayed in the temperature setting display of the remote controller

(Example)



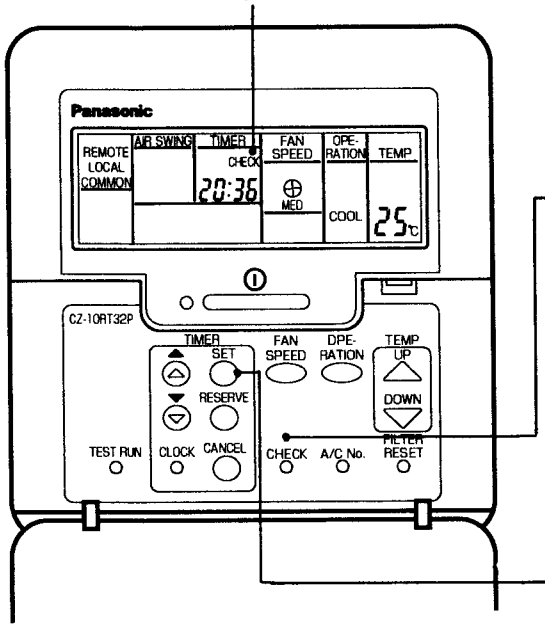
- During group control, the number appearing in the timer display will change each time the air conditioner No. switch is pressed, and the pipe temperature for the indoor unit cerresponding to the number displayed will appear in the temperature setting display.

4. Check that the temperature in the pipe temperature display starts dropping after operation has been continuing for some time.
   (The temperature will increase during heating operation.)

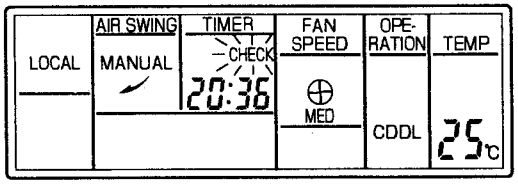
Self-diagnosis function

- The wired remote controller display and the self-diagnosis LEDs (red) on the outdoor unit printed circuit board indicate where the abnormality has occurred.
- Recalling the error display

Display



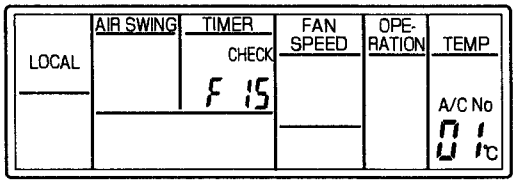
(Example)



When an abnormality occurs at this unit, "CHECK" flashes in the display.

Press the CHECK switch while the display is flashing.

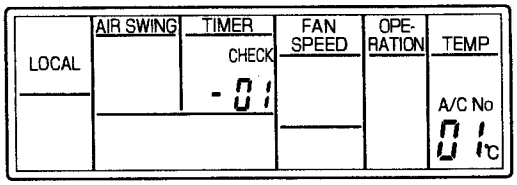
(Example)



The timer display will change and an error code from F15 to F49 will appear in place of the time. (The temperature setting display will also change to show the air conditioner No.)

Press the TIMER ON/OFF switch while the error is displayed.

(Example)



The F15 - F49 display will change to the detail display.

<Air conditioner No.>

- The air conditioner No. "01" appears during normal installation and use. When using group control, a different number may appear. The air conditioner No. can be displayed by pressing the air conditioner No. switch.

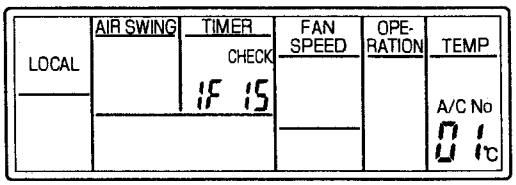
- After checking the error display and the detail display, refer to the self-diagnosis error code table on the following page and check the location of the problem.
- If the problem is repaired and operation returns to normal, the CHECK display on the remote controller will put out, but the self-diagnosis LED will remain illuminated until operation starts again.

How to display the past errer messago

If the "CHECK" display on the wired remote controller is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER, FORWARD or BACK buttons.
(Last problem display: 1F15 - 1F49
Second-last problem display: 2F15 - 2F49)

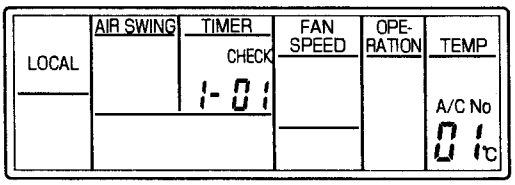
Press the CHECK button once more to return to the normal display.

(Example of last problem display)



An error code from 1F15 to 1F49 will be displayed.
(The temperature setting display will also change to show the air conditioner No.)

(Example)



If the TIMER ON/OFF switch is pressed while the error code from 1F15 to 1F49 is being displayed, the display screen will change to show the details of the last problem display.
(If 2F15 to 2F49 is being displayed, the details of the second-last problem display will appear.)

● Self-diagnosis error code table

☼: Flashing ○: Illuminated Blank: Off

Remote controller display			Printed circuit board self-diagnosis LED (red)								Error display
Wired		Wireless	Indoor unit	Outdoor unit							(Check location)
Error display	Detail display	Run LED	LED2	LED2	LED3	LED4	LED5	LED6	LED7	LED8	
F17	–01	☼	☼	☼	☼			☼	(※2)	(※2)	Option problem Optien connection terminals
F20	–01	☼	☼	☼			☼		(※2)	(※2)	Indoor temperature thermistor problem Indoor temperature thermistor lead wire or indoor unit connector CN1
	–02	☼	☼	☼		☼	☼		(※2)	(※2)	Remote control thermistor problem Remote control thermistor
F21	–01	☼	☼		☼		☼		(※2)	(※2)	Pipe temperature thermistor problem (indoor unit side) Pipe temperature thermistor lead wire or indoor unit connector CN1
F25	–01	☼	☼			☼			(※2)	(※2)	Centralised control address overlap problem Check settings for optional centralised control circuit board address switch
F26	–01	☼	☼		☼				(※2)	(※2)	Remote control transmission wire open circuit problem Remote control unit cable and connection terminals
	–02	☼	☼	☼					(※2)	(※2)	Remote control transmission problem Check the transmission wave pattern
F27	–01	☼	☼		☼				☼		Indoor/outdoor unit transmission wire open circuit problem Indoor/outdoor unit connection cable and connection terminals, or indoor unit and outdoor unit power supplies
	–02	☼	☼	☼					☼		Indeor/outdoor unit transmission problem Check the transmission wave pattern.
F29	–01	☼	☼		☼		☼	☼	(※2)	(※2)	Indeor unit setting problem Abnormal setting of the indoor p.c.board.
	–02	☼	☼	☼			☼	☼	(※2)	(※2)	Indoor unit setting problem Abnomal setting of the indoor p.c.board.
	–12	☼	☼	☼		☼	☼	☼	(※2)	(※2)	Remote control unit setting problem Abnomal setting of the remote controller.
F30	–02	☼	☼	☼		☼		☼	☼		Negative or open phase power supply Check the main power supply terminal board connections, and switch the main power supply phase.
	–06	☼	☼		☼	☼		☼	☼		Poor power supply connection, or distorted voltage wave pattern Check the main power supoly terminal board connections, and check the power supply wave patttem.
	–07	☼	☼	☼	☼	☼		☼	☼		Peor power supply connection Check the main power supply terminal board connections.
F31	–02	☼	☼		☼			☼	☼		High-pressure cut-off Refrigeration system, Obstructing of the heat radiation from outdoor unit
F33	–01	☼	☼	☼				☼	☼		Cempressor overcurrent protection Open phase or lock in compressor, or blown main power supply fuse
	–02	☼	☼	☼	☼			☼	☼		Compressor discharge temperature protection Insufficient gas
F40	–41	☼	☼	☼			☼		☼		Compressor discharge temperature thermistor problem Discharge temperature thermistor lead wire, outdoor unit connector CN2, or relay connector
	–61	☼	☼		☼		☼		☼		Heat exchanger outlet temperature thermistor problem (Outdoor unit) Heat exchanger outlet temporature thermistor lead wire, outdcor unit connector CN2, or relay connector
F41	–02	☼	☼	☼		☼	☼		☼		High-pressure switch open circuit problem High-pressure switch lead wire, outdoor unit connector CN2, or relay connector
	–03	☼	☼		☼	☼	☼		☼		Heating pressure switch open circuit problem Healing pressure switch lead wire, outdoor unit connector CN2, or relay connector
F42	–01	☼	☼	☼	☼		☼		☼		Current detector open circuit or compressor current problem Outdoor unit connector CN2, compressor internal protection system activated, or blown main power supply fuse
F49	–01	☼	☼		☼		☼	☼	☼		Outdoor unit setting problem Abnormal setting of the outdoor p.c.board
	–02	☼	☼	☼			☼	☼	☼		Outdoor unit setting problem Abnormal setting of the outdoor p.c.board

If mere than one error occurs between the indoor and outdoor units, the problem display on the remote controller may not match the LED display on the outdoor unit printed circuit board. In such cases, check both locations and remove the causes of the preblems.

(※2)

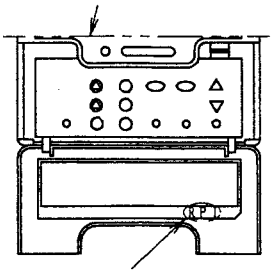
LED7	LED8	Unit display for twin/triple system
		Master unit error
○		Slave unit 1 error
	○	Slave unit 2 error

● The LED1 (green) illuminates to indicate that the microprocessor on the microprocessor circuit board is operating normally.
If the LED is switched off or is flashing irregularly, check the power supply, and turn it off and then back on again.

Energy save setting

Open the cover of remote control unit and confirm the presence of the 「RP1」 marking.
Energy save setting method should be different for with 「RP1」 marking and without 「RP1」 marking.

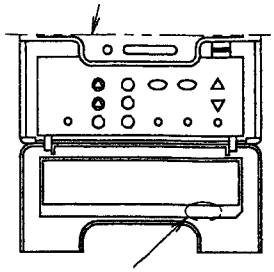
Remote control nuit



There is 「RP1」 marking.

・Upper and iower limits can be set for the setting temperatur during cooling and heating operation (Energy save setting)
(1)While operation is stopped ・ press the UP and DOWN switches simultaneously.
(2)"0"(zero) will flash in the clock display at this time ・ so press the RESERVE switch.
(3)To set an upper limit (Setting a temperature above the energy save temperature will not be possible.)
Press the OPERATION MODE switch unit HEAT is displayed.
Press the UP or DOWN switch to set the temperature.
Press the RESERVE switch.
Example:If the heating display is set to 28℃ ・ setting the temperature to higher than 28℃ will not be possible.
(4)To set a lower limit (Setting a temperature below the energy save temperature will not be possible.)
Press the OPERATION MODE switch unit COOL is displayed.
Press the UP or DOWN switch to set the temperature.
Press the RESERVE switch.
Example:If the cooling display is set to 22℃ ・ setting the temperature to lower than 22℃ will not be possible.
(5)If the CLEAR switch is pressed during steps (3) or (4) above ・ the energy save setting will be cleared.
★Press the RESERVE switch or the CLEAR switch to return to normal operation mode after making an energy save setting in steps (3) to (5).

Remote control nuit



There is not 「RP1」 marking.

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Press the UP or DOWN switch to set the temperature.
Press the RESERVE switch.
Example:If the cooling display is set to 22℃ ・ setting the temperature to lower than 22℃ will not be possible.
(4)If the CLEAR switch is pressed during steps (2) or (3) above ・ the energy save setting will be cleared.
★Press the RESERVE switch or the CLEAR switch to return to normal operation mode after making an energy save setting in steps (2) to (4).

(1 Setting group control for 1 remote control unit)

- When using a remote-controlled thermostat, the thermostat setting is used for all indoor units in the group.
- During group control, up to a maximum of 16 indoor units can be connected. (Do not mix heat pump units and cooling-only units.)
- Do not mix manual settings and automatic settings. (manual settings take priority.)
- The master unit and slave units can all be centrally controlled during group control.

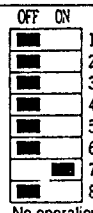
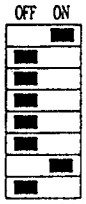
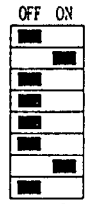
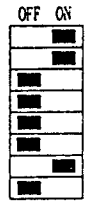
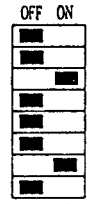
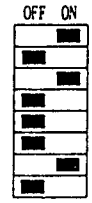
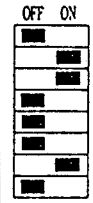
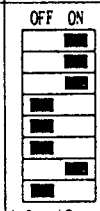
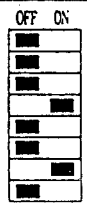
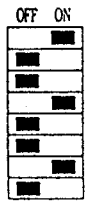
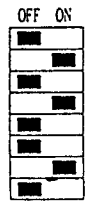
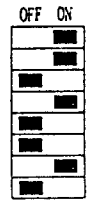
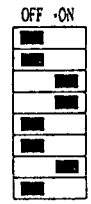
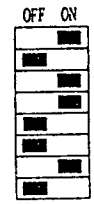
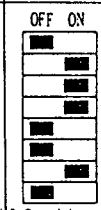
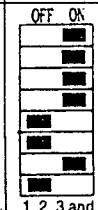
(Automatic setting for group control)

- If the power supplies for indoor units which are connected are turned on simultaneously, the indoor unit numbers will be determined automatically after approximately 1 minute. (DIP switch settings are not necessary.)

NOTE:

- Correct wiring connections are a basic requirement for automatic setting. If the wires are connected incorrectly when the power is turned on, the settings will not be made correctly and operation will not be possible.
- When address numbers are set automatically, you will not know which address number corresponds to which indoor unit.
- Do not turn off the power supply for at least 1 minute during automatic address setting, otherwise the settings will not be made correctly.

(Manual setting for group control)

	Indoor unit No.	1	2	3	4	5	6	7	8
Manual setting	DIP switch (DSW1) setting on indoor unit printed circuit board Air conditioner No. setting	 No operation necessary	 1 is ON	 2 is ON	 1 and 2 are ON	 3 is ON	 1 and 3 are ON	 2 and 3 are ON	 1, 2 and 3 are ON
	Indoor unit No.	9	10	11	12	13	14	15	16
	DIP switch (DSW1) setting on indoor unit printed circuit board Air conditioner No. setting	 4 is ON	 1 and 4 are ON	 2 and 4 are ON	 1, 2 and 4 are ON	 3 and 4 are ON	 1, 3 and 4 are ON	 2, 3 and 4 are ON	 1, 2, 3 and 4 are ON

<Automatic address resetting for group control>

After setting DIP switches 1 to 4 to OFF and stop operation. Then press the 'AIR SWING AUTO''OPERATION MODE' and 'Air conditioner No.' switches simultaneously. The addresses will be momentarily reset, and then automatic address setting will be carried out once more.

Switching the thermistor

- The temperature detection thermistor used for detecting the air temperature and changing between COOL and HEAT operation can be switched between the thermistor at the indoor unit and the thermistor at the remote control unit box. However, do not switch to the remote control unit thermistor if using two remote control units.

(1) While operation is stopped, press and hold the STOP/RUN switch, and then press the UP and DOWN switches together.
(2) "00" or "01" will appear in the time display.
(3) Press the FORWARD or BACK timer switches to switch the display between "00" and "01".
"00" ... Indoor unit setting (factory default)
"01" ... Remote control unit setting
(4) Press the RESERVE switch. (Be sure to press the RESERVE switch so that normal operation mode can be resumed.)

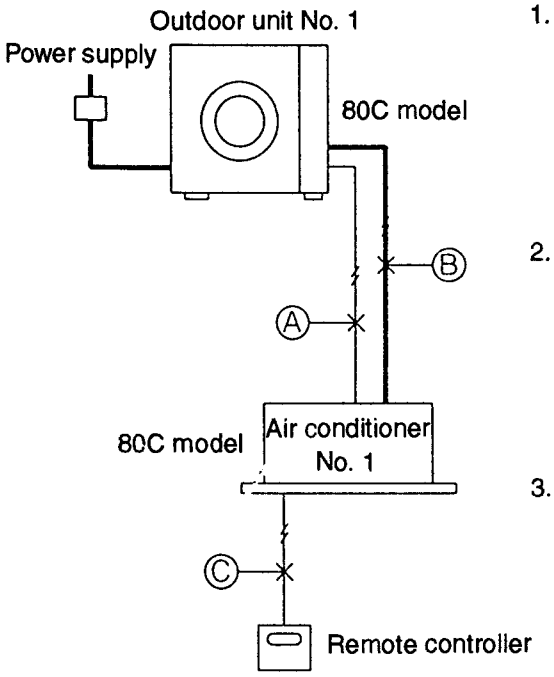
- Repeat the procedure in steps (1) to (4) to change the setting again.

■If teet operetion does not proceed correctly

Carry out test operation after approximately 8 hours have passed since the power was turned on (crankcase heater is energized).
If operation is started by using the remote controller within 1 minute of turning on the power, the outdoor unit sottings will not be made correctly and correct operation will not be possible.

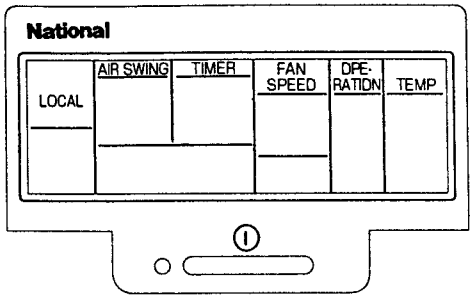
If the following symptoms occur after turning on the power, check the wiring connections once more.

■For standard installation
(System example)

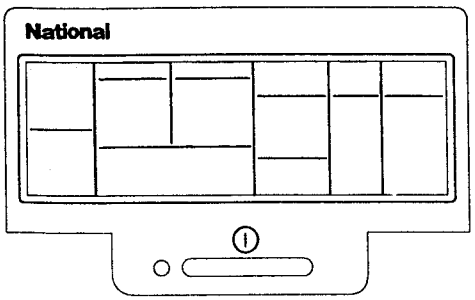


1. The main power is turned on while the indoor-outdoor transmission wires are not connected (open circuit at section A)
   Symptom: Remote control unit . . . . "CHECK" flashes
   NOTE: Indoor unit . . . . LED2 on printed circuit board flashes
   Outdoor unit . . . LED 3 and LED 7 on printed circuit board flash
2. The main power is turned on while the indoor-outdoor power supply wires are not connected (open circuit at section B)
   Symptom: Remote control unit ... Display of "No power supply"
   NOTE: Indoor unit . . . . No display
   Outdoor unit . . . LED 3 and LED 7 on printed circuit board flash
3. The main power is turned on while the remote control unit connection cord is not connected (open circuit at section C)
   Symptom: Remote control unit ... Display of "No power supply"
   NOTE: Indoor unit . . . . LED1 on printed circuit board stays illuminated
   Outdoor unit . . . LED1 on printed circuit board stays illuminated

(When remote controller display shows "Power supply")



(When remote controller display shows "No power supply")



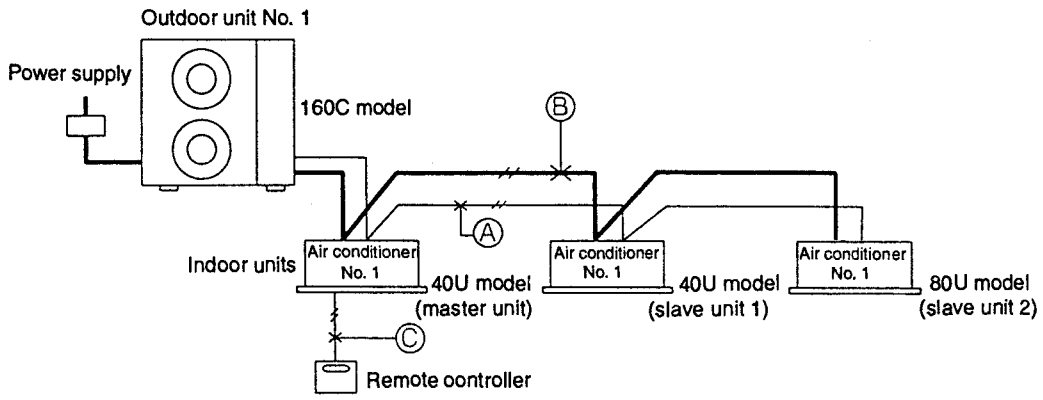
Remedy

1. Turn off the main power.
   ⇩
2. Connect the disconnected wires correctly.
   ⇩
3. Turn the main power back on.
   ⇩
4. After 1 minute, start operation using the remote controller.
   (Indoor unit ... Operation will start according to the remote controller setting.)
   (Outdoor unit ... Operation will start after 3-5 minutes.)

NOTE: The "CHECK" display on the remote controller and the flashing of LEDs on the printed circuit boards will not occur immediately. They will appear 3-6 minutes after the main power is turned on.

●During twin/triple operation

(System example)



1. The main power is turned on while the transmission wires between the indoor unit(s) are not connected (open circuit at section A)

   Symptom: Nothing abnormal appears on the remote controller display. If operation is then started in this condition, the combination of the160C outdoor unit and the 40U indoor unit (master unit) will cause abnormal operation to occur.

   ⇩

   If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop.

   •Remote controller . . . . . "CHECK" flashes
   •Indoor unit (master) . . . The LEDs on the printed circuit board flash and operation stops
   •Indoor unit (slave) . . . . . LED1 on the printed circuit board illuminates and the unit does not operate at all
   •Outdoor unit . . . . . The LEDs on the printed circuit board flash and operation stops

2. The main power is turned on while the power supply wires between the indoor unit(s) are not connected (open circuit at section B)

   Symptom: Same as above.If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop.

   ⇩

   •Remote controller . . . . . "CHECK" flashes
   •Indoor unit (master) . . . The LEDs on the printed circuit board flash
   •Indoor unit (slave) . . . . . The LEDs on the printed circuit board do not illuminate and the unit does not operate at all
   •Outdoor unit . . . . . The LEDs on the printed circuit board flash and operation stops

3. The main power is turned on while the remote controller connection cord is not connected (open circuit at section C)

   Symptom: •Remote control unit . . . Display of "No power supply"
   •Indoor unit (master) . . . LED1 on the printed circuit board stays illuminated and the unit does not operate
   •Indoor unit (slave) . . . . . LED1 on the printed circuit board stays illuminated and the unit does not operate
   •Outdoor unit . . . . . LED1 on the printed circuit board stays illuminated and the unit does not operate

Remedy

1. Turn off the main power.
   ⇩
2. Connect the disconnected wires correctly.
   ⇩
3. Turn the main power back on.
   ⇩
4. After 1 minute, start operation using the remote controller.
   (Indoor units Operation will start according to the remote controller setting.)
   (Outdoor unit...Operation will start after 3-5 minutes.)

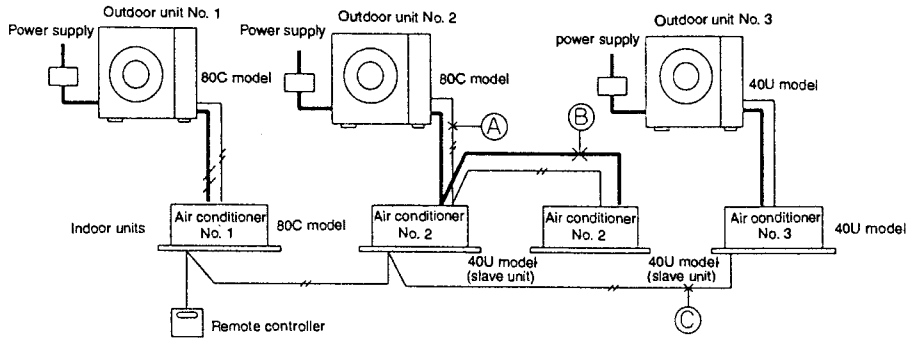
If slave units do not operate even after the wiring has been corrected (automatic addressing is not possible)

1. Check that DIP switches 1 to 4 and DIP switch 8 are all set to OFF, and then stop operation.
   ⇩
2. Press the ADDRESS RESET switch (SW3) at the outdoor unit for approximately 4 seconds (The self-diagnosis LEDS 2 to 8 will illuminate in order, and the system is reset once they are all illuminated.)

The above procedure cannot be used to carry out automatic address resetting during group control.

●During group control operation

(System example)



1. The main power is turned on while the transmission wires between the indoor unit and the outdoor unit are not connected (open circuit at section A)

   Symptom: Operation of indoor unit No. 1 and indoor unit No. 3 is possible.
   However, "CHECK" flashes in the remote control unit display for 3-5 minutes after the main power is turned on.
   •Remote controller . . . . . "CHECK" flashes
   •Indoor unit No. 2 . . . . . LED2 on the printed circuit board flashes (both master and slave units)
   •Outdoor unit No. 2 . . . . LED3 and LED7 on the printed circuit board flash

2. The main power is turned on while the power supply wires between the indoor units are not connected (open circuit at section B)

   Symptom: Operation of indoor unit No. 1 and indoor unit No. 3 is possible
   However, if operation is then started in this condition, the combination of the 80C outdoor unit and the 40U indoor unit (master unit) will cause abnormal operation of indoor unit No. 2 to occur

   ⇩

   If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop.
   •Remote controller . . . . . "CHECK" flashes (indoor unit No. 2 abnormality)
   •Indoor unit No. 2 . . . . . LED2 on the printed circuit board flashes (both master and slave units)
   •Outdoor unit No. 2 . . . . The LEDs on the printed circuit board flash

3. The main power is turned on while the remote controller connection cord is not connected (open circuit at section C)

   Symptom: Nothing abnormal appears on the remote controller display, and operation of indoor unit No. 1 and indoor unit No. 2 is possible.
   However, indoor unit No. 3 cannot be operated.

Remedy

1. Turn off the main power.
   ⇩
2. Connect the disconnected wires correctly.
   ⇩
3. Turn the main power back on.
   ⇩
4. After 1 minute, start operation using the remote controller.
   (Indoor units . . . Operation will start according to the remote controller setting.)
   (Outdoor unit. . . Operation will start after 3-5 minutes.)

If slave units do not operate even after the wiring has been corrected (automatic addressing is not possible)

1. Check that DIP switches 1 to 4 and DIP switch 8 are all set to OFF, and then stop operation.
   ⇩
2. Press the 'AIRSWING AUTO', 'OPERATION' and 'A/C No.' switches simultaneously.
   The addresses will be momentarily reset, and then automatic address setting will be carried out once more.

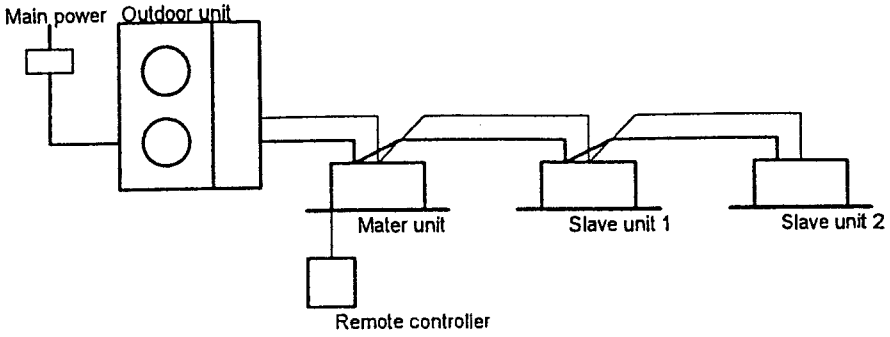
The above procedure cannot be used to carry out automatic address resetting of twin/triple control.

(Note on automatic address setting)

The printed circuit boards automatically store the connected system configuration when power is supplied. As a result, once the power has been turned on for these printed circuit boards, the units can not be changed about within the system, even if the units are of the same model and have the same capacity.

ADDRESS SETTING FOR TWIN/TRIPLE SYSTEM

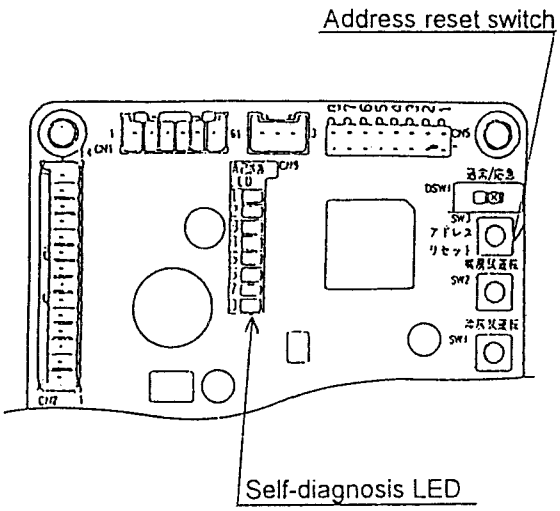
(Example)



1. Automatic address setting (no need to have dip-switch set)

If the wiring connected properly as above example, the address is set automatically by the main power supply. A indoor unit with remote controller will be set as the master. If the power source is installed to indoor units and outdoor separately, turn on the switch as the following procedure: outdoor unit, indoor unit with controller, and other indoor units.

When the slave units do not operate (when address cannot be set)



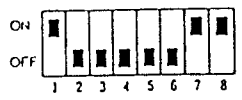
Reset the address as the following procedure:

1. After making sure that dip-switch No. 1 to 4 and No. 8 are OFF, stop the operation.
2. Push address reset switch (SW3) on the outdoor unit PC board for 4 seconds. Self-diagnosis LED No. 2 to 8 will start blinking by order. And when all 7 pieces of LED (No. 2 ~ 8) are illuminated, address reset will be finished. Then the address for the slave unit will be reset.

Important: The address for the group control cannot be reset, using the above mentioned procedure.

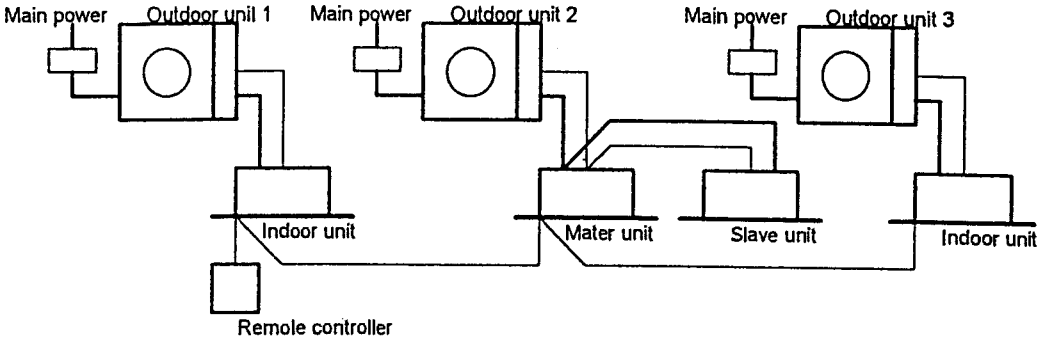
Manual address setting (by dip-switch DSW1)

When you set the address manually, set the dip-switch of the PC board in the indoor unit as follow:

Master unit	Slave unit (Slave No. 1 of Triple)	Slave unit (Slave No. 2 of Triple)
No need to set address for the RC of the master unit The address for the master unit will be set in the unit with RC	DSW1 No. 8 ON, The others no change	DSW1  No. 1 and 8 ON, The others no change

ADDRESS SETTING FOR GROUP CONTROL SYSTEM

(Example)



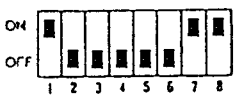
1. Automatic address setting (no need to have dip-switch set)

If the wiring connected properly as above example, the AC numbers are set automatically by the main power supply. A indoor unit with remote controller will be set as the master.

If the power source is installed to indoor units and outdoor separately, turn on the switch as the following procedure: outdoor unit, indoor unit with controller, and other indoor units. The AC number will be set at random.

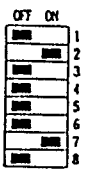
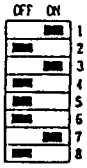
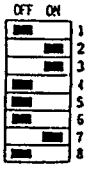
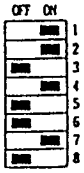
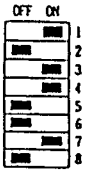
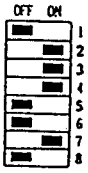
Manual address setting (by dip-switch DSW1)

When you set the address manually, set the dip-switch of the PC board in the indoor unit as follow:

Master unit	Slave unit (Slave No. 1 of Triple)	Slave unit (Slave No. 2 of Triple)
No need to set address for the RC of the master unit The address for the master unit will be set in the unit with RC	DSW1 No. 8 ON, The others no change	DSW1  No. 1 and 8 ON, The others no change

Manual address setting (by dip-switch DSW1)

When you set the address manually, set the dip-switch of the PC board in the indoor unit as follow:

Indoor unit No.	1	2	3	4	5	6	7	8
Dip-switch on the PCB of the indoor unit (DSW1)								
	No change	No.1 ON	No.2 ON	No.1, 2 ON	No.3 ON	No.1, 3 ON	No.2, 3 ON	No.1,2,3 ON
Indoor unit No.	9	10	11	12	13	14	15	16
Dip-switch on the PCB of the indoor unit (DSW1)								
	No.4 ON	No.1, 4 ON	No.2, 4 ON	No.1,2,4 ON	No.3, 4 ON	No.1,3,4 ON	No.2,3,4 ON	No.1,2,3,4 ON

Procedure for delete of memory at twin / triple control system.

1.Set the 'off' position for main power supply switch .

2.Set the 'on' position for No.8 pin of dip switch (DSW1) on indoor unit P.C.board.

3.Take main power supply switch 'on' for one minutes, and then main power supply switch off.

4.Set the 'off' position for No.8 pin of dip switch(DSW1).

Procedure for delete of memory at group control system.

1.Set the 'off' position for main power supply switch .

2.Set the 'on' position for No.1 pin to No.4 pin of dip switch (DSW1) on indoor unit P.C.board.
(No.8 pin of dip switch (DSW1) should be 'off' position)

3.Take main power supply switch 'on' for one minutes, and then main power supply switch off.

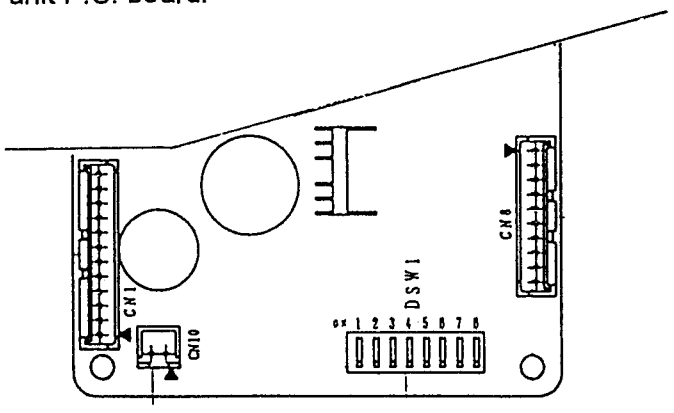
4.Set the 'off' position for No.1 ,No.2, No.3 and No.4 pin of dip switch(DSW1).

(Important notice)

Above procedure is for delete of memory on indoor unit P.C. board. And it is not for Address reset .

Indoor unit P.C.board layout.

Below drawing has showing the location of dip switch 1(DSW1) on the indoor unit P.C. board.



Dip switch1(DSW1). [to use for manual setting]

■Emergency operation

■Emergency operation of outdoor unit

Emergency operation can be carried out by setting the DSW1 switch on the printed circuit board inside the outdoor unit to the EMERGENCY position. However, emergency operation is only carried out when an abnormality is detected by the indoor/outdoor temperature thermistors.

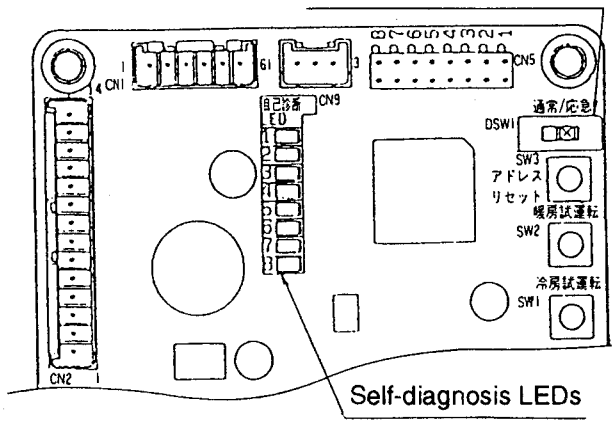
The resistance values of each thermistor are measured as shown in the table below to determine if there is an abnormality.

<Thermistor resistance table>

Temperature	Resistance value (kΩ) ±5%	
	Room temperature thermistor	Pipe temperature thermistor
−20°C	205.8	197.8
−10°C	114.6	111.9
−5°C	87.3	85.4
0°C	67.0	65.8
5°C	51.8	51.0
10°C	40.4	39.9
15°C	31.7	30.7
20°C	25.1	25.0
25°C	20.0	20.0
30°C	16.1	16.0
40°C	10.4	10.6
50°C	6.9	7.1
60°C	4.7	4.9
70°C	———	3.5
80°C	———	2.5
90°C	———	1.8
100°C	———	1.4

The pipe temperature thermistor resistance values are the same for the indoor and outdoor units.

<When a thermistor abnormality is judged to have occurred>



•Set only the thermistor which shows an abnormality to the condition shown in the table below to carry out emergency operation.

	Thermistor	Cooling mode	Heating mode
Indoor unit	Room temperature	Fixed at 25°C	
	Room temperature	Shorted	Open

	Thermistor	Cooling mode	Heating mode
Outdoor unit	Discharge temperature	Open	Shorted
	Heat exchanger outlet temperature	Shorted	Open

•Refer to the circuit diagram for the connection locations for each thermistor.

•If there is an abnormality in the room temperature thermistor, the temperature will be fixed at 25°C regardless of the remote control unit display.

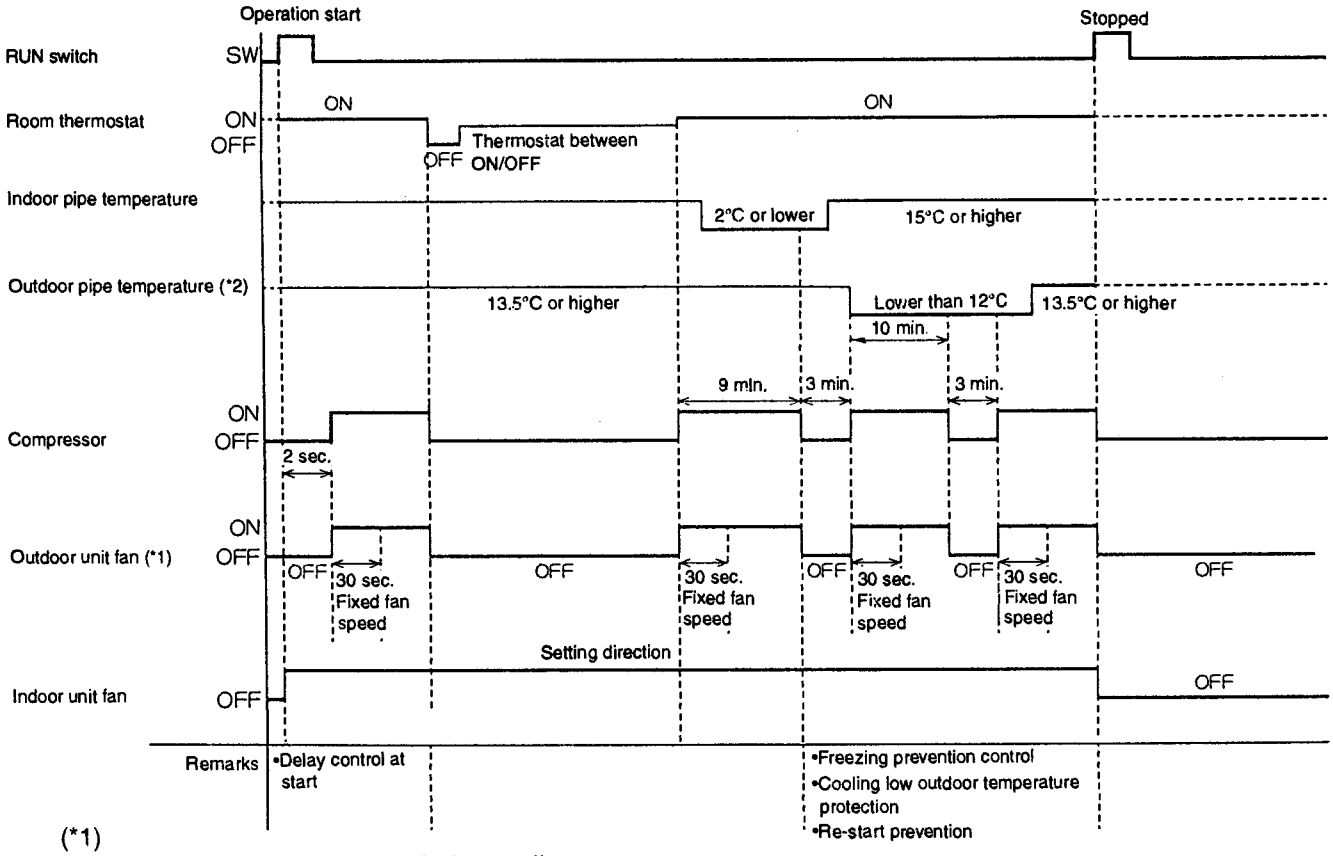
NOTE: •Any abnormalities detected by the temperature thermistors are ignored during emergency operation, so that long-term operation in this mode should be avoided.

•After emergency mode operation has been competed and normal operation is to be resumed, turn the power supplies for the indoor and outdoor units off and return the DIP switch to the NORMAL position.

•Self-diagnosis LEDS 4 to 6 will flash during emergency operation.

■Description of basic Functions

1 Cooling mode operation time chart



(*1)

Outdoor unit fan start control during cooling

At the start of cooling mode and drying mode operation, the outdoor unit heat exchanger outlet temperature is detected in order to set the fan speed.

Operation is carried out at the fan speed detected for 30 seconds.

Heat exchanger outlet temperature detected (T)	Outdoor unit fan start speed
T < 0°C	SUPER LOW
0°C ≦ T < 10°C	LOW
10°C ≦ T < 20°C	MEDIUM
20°C ≦ T < 25°C	HIGH
25°C ≦ T	SUPER HIGH

After 30 seconds, the heat exchanger outlet temperature is detected and the outdoor unit fan speed is changed automatically.

(*2)

Cooling low outdoor temperature protection

When the heat exchanger outlet temperature drops to less than 12°C for a continuous period of 10 minutes, the outdoor unit stops running.

This is canceled after 3 minutes (re-start prevention)

•Remote controller displays and indoor unit operation continue during this time.

•The 10-minute countdown is cleared if the compressor stops or if the temperature at the outdoor unit outlet rises to 13.5°C or higher.

3 Freezing prevention control

①Operation

During cooling mode operation, after 9 minutes have passed since the compressor turned on, the outdoor units stops operating when the temperature detected by the indoor unit pipe temperature sensor is 2°C or lower.

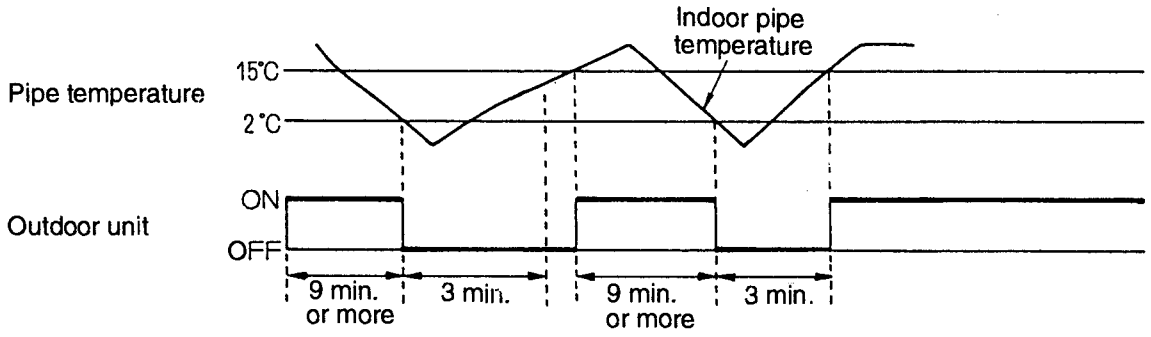
The indoor unit continues operating at the fan speed set by the remote control unit. (The remote control unit display does not change.)

③Canceling

This control is canceled when the temperature detected by the indoor unit pipe temperature sensor is 15°C or higher.

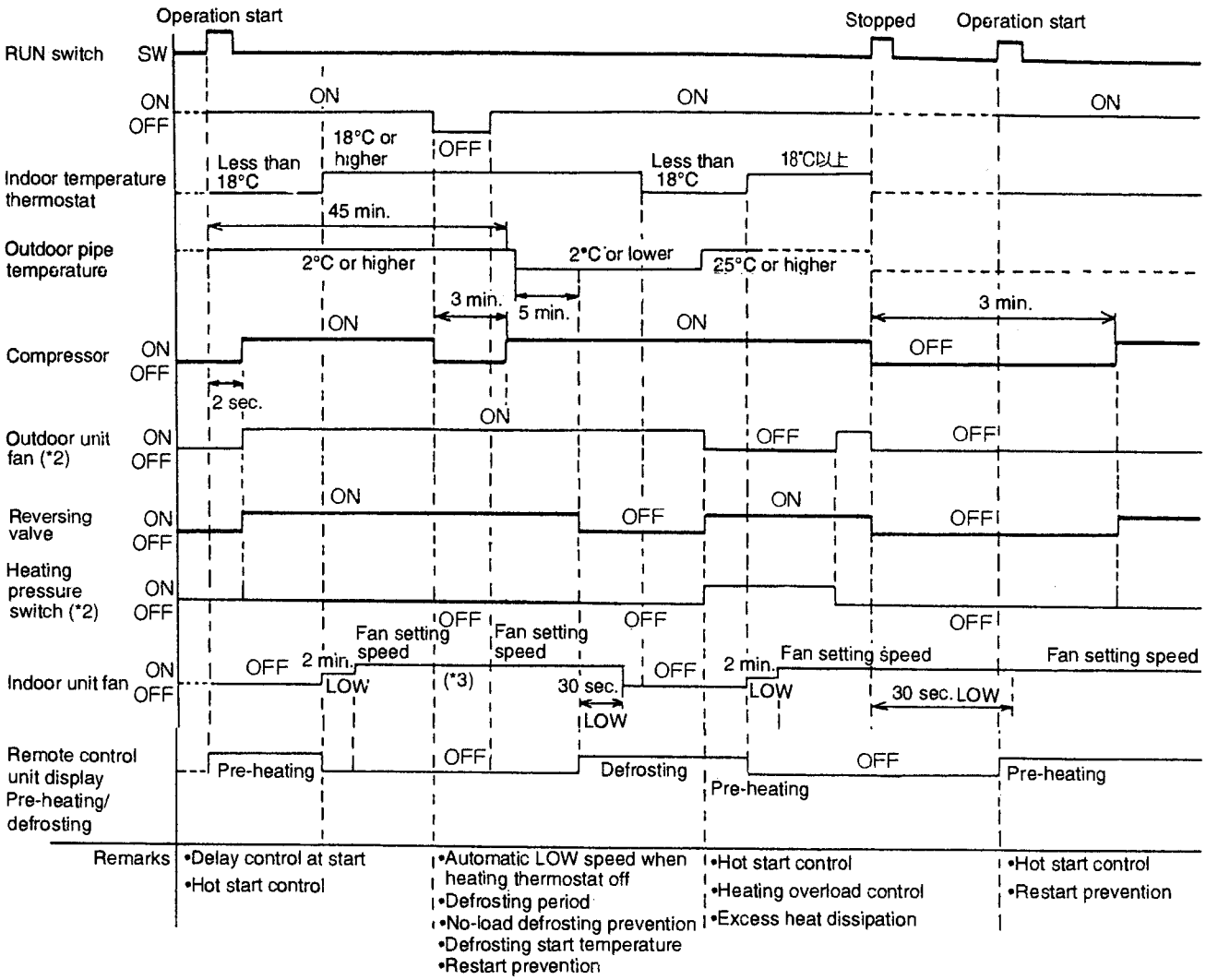
(If the outdoor unit stops even though the temperature is 15°C or higher, restart prevention control will activated and the outdoor unit will not start again for 3 minutes.)

(The 9-minute countdown is cleared while the compressor is stopped.)



(The above illustration shows the operation when there are no conditions for turning the outdoor unit off other than freezing prevention.)

[4]Heeting mode operation time chart (Heat pump type only)



(*3) Refer to "[6] Indoor unit fan control when thermostat is off during heating mode operation"

(*4) Refer to "[9] Indoor thermostat characteristics

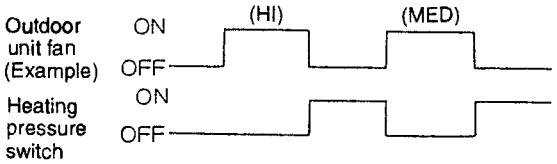
(*2)

Outdoor unit fan control during heating mode operation

Under conditions when the compressor is on during heating mode operation (except during defrosting and when the liquid bypass valve is on), the outdoor unit fan is controlled by means of input (CN2) indicating whether the contact of the heating pressure switch on the outdoor unit circuit board is open or closed.

(At the start of heating mode operation, the fan operates at HI speed.)

Heating pressure switch contact	Outdoor unit fan operation
ON (open) - OFF (closed)	One step down from fan speed before stopping
ON (open)	Stopped



The heating pressure switch turns on at 2.35 MPa and off at 1.96 MPa.

5 Hot starting

1. When heating mode operation starts

①Start

Hot start control commences when heating mode operation starts.

②Operation

"PREHEAT" appears on the remote controller display. (Other displays remain unchanged.)

At the indoor unit, the indoor unit fan stops. In addition, during hot starting, the louver stays at the horizontal position (angle 0°).

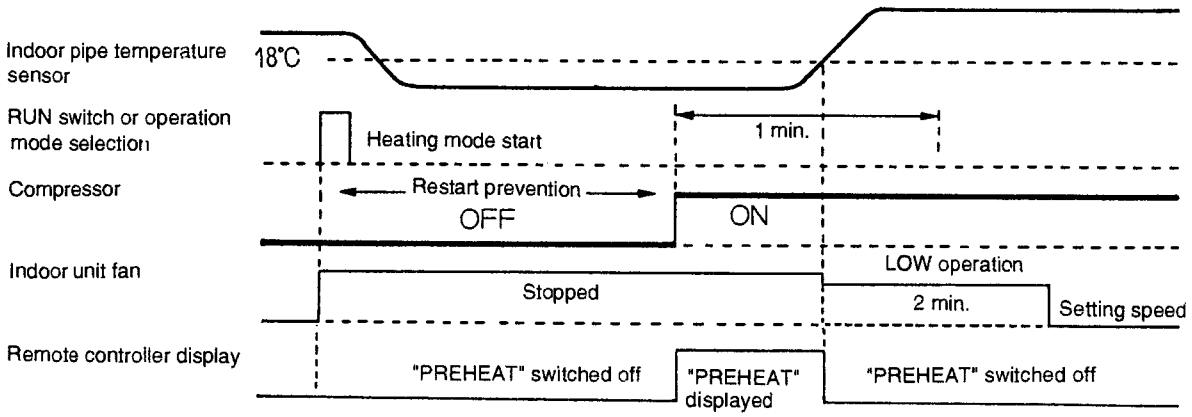
③Canceling

After 1 minute has passed since heating mode operation started, or if the compressor has turned on, hot starting is canceled when the temperature detected by the indoor unit pipe temperature sensor is 18°C or higher.

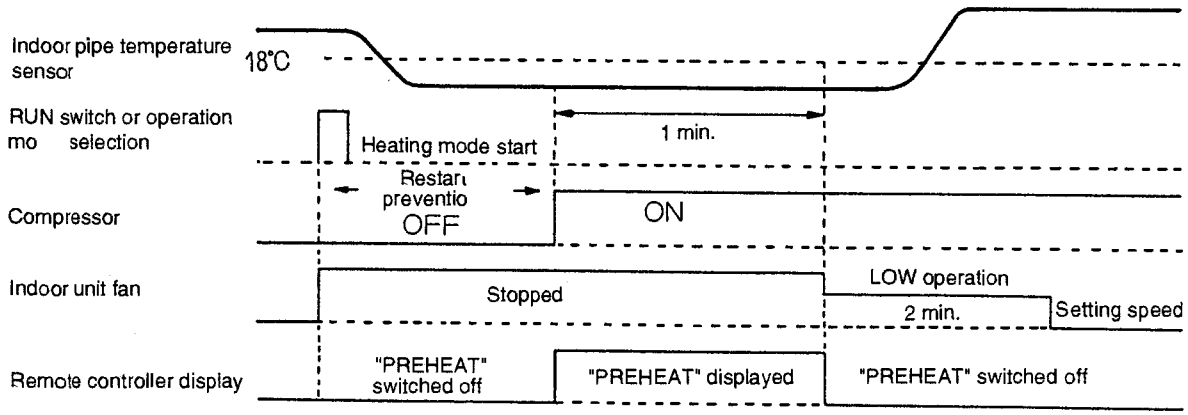
After cancellation, the "PREHEAT" display on the remote controller disappears and the louver operation returns to the previous setting.

(However, for 2 minutes after cancellation, the indoor unit fan operates at LOW speed, and then returns to the previous setting.)

<When hot start operation is canceled by temperature>



<When hot start operation is canceled by time>



2. When defrosting is complete

①Start

Hot start control commences when defrosting is complete.

②Operation

"PREHEAT" appears on the remote controller display. (Other displays remain unchanged.)

At the indoor unit, the indoor unit fan stops. In addition, during hot starting, the louver stays at the horizontal position (angle 0°).

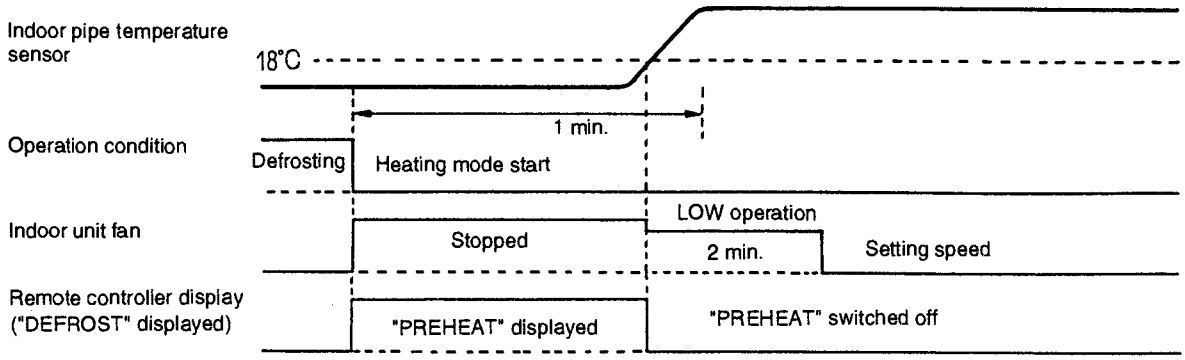
③Canceling

Hot starting is canceled when the temperature detected by the indoor unit pipe temperature sensor is 18°C or higher, or after a maximum 1 minute has passed since defrosting was completed.

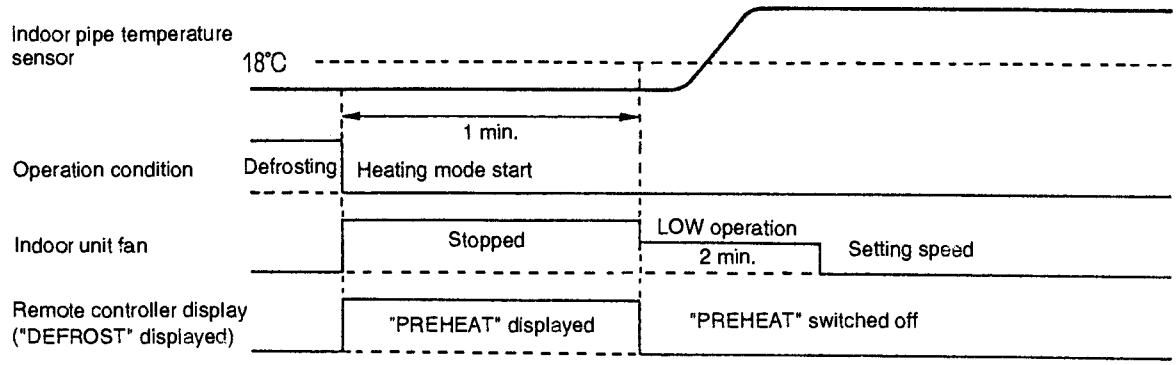
After cancellation, the "PREHEAT" display on the remote controller disappears and the louver operation returns to the previous setting.

(However, the indoor unit fan operates at LOW speed for 2 minutes after cancellation, and then returns to the previous setting.)

<When hot start operation is canceled by temperature>



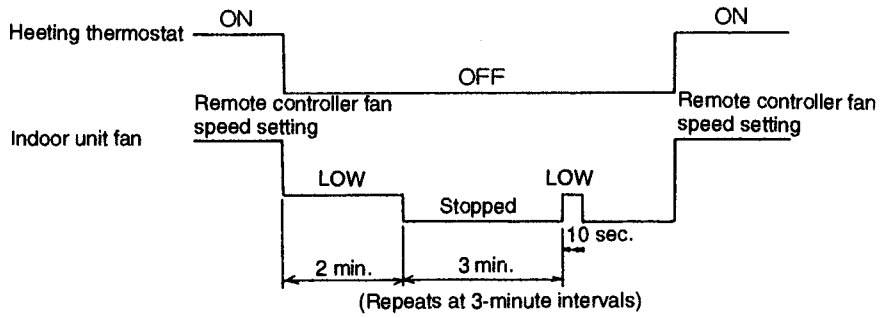
<When hot start operation is canceled by time>



6 Indoor unit fan control when thermostat is off during heating mode operation

< >

When the thermostat of the indoor unit turns off during heating mode operation, the indoor unit fan operates for 2 minutes at LOW and then stops. In addition, 5 minutes after the thermostat of the indoor unit turns off, the indoor unit fan again runs at LOW for 10 seconds, and at 3-minute intervals after that it switches back to LOW operation for 10 seconds.



7 Excoss heat dissipation for indoor unit

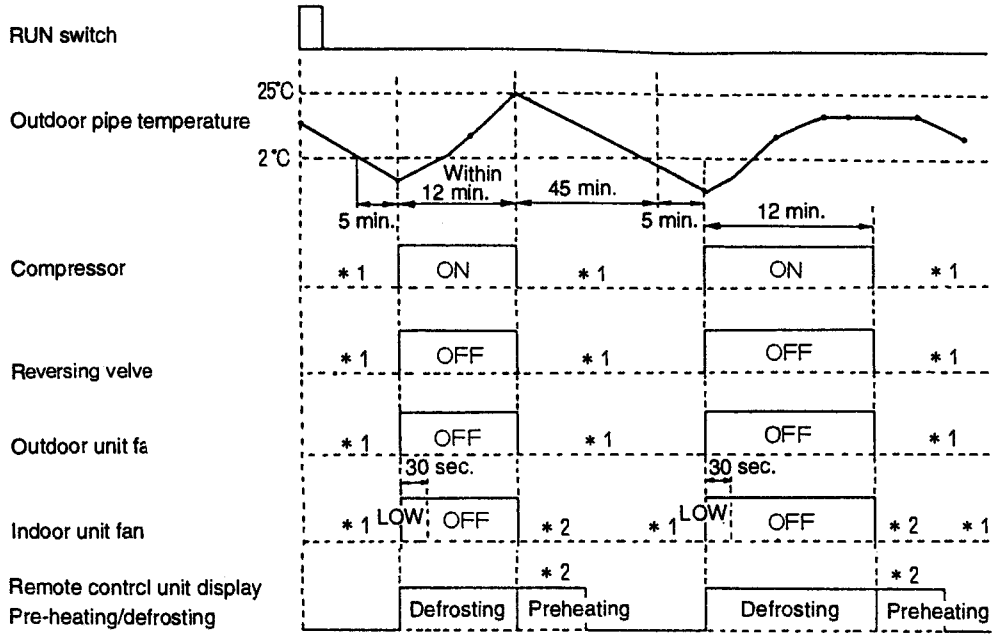
The indoor unit fan continues operating for 30 seconds after heating mode operation turns off in order to dissipate excess heat.

①When heating mode operation has stopped
(LOW operation for 30 seconds)

②When operation is set to a mode other than heating by means of the OPERATION MODE switch

③If operation starts again during the 30 seconds mentioned in (1) above
(The fan operates at LOW speed for the remainder of the 30 seconds in (1), and then hot start commences.)

8 Defroet mode operation time chart



1. Start and oompletion of defrosting

   ①Start

   During heating mode operation (including automatic heating), after the 45-minute defrosting cycle time has passed, defrosting starts if the temperature detected by the outdoor unit heat exchanger outlet sensor is 2°C or lower for a continuous 5-minute period.

   However, if the outdoor unit fan is stopped, the start of defrosting will be delayed by 5 minutes.

   The defrosting cycle is 50 minutes from the start of heating mode operation.

   ②Completion

   Defrosting mode operation stops 12 minutes after it starts, or if the temperature detected by the outdoor unit heat exohanger outlet sensor is 25°C or higher.

   After defrosting is complete, hot starting commences.

   ③Forced defrosting

   If P8 on the outdoor unit circuit board is shorted while the compressor is on during heating mode operation and the temperature detected by the outdoor unit heat exchanger outlet sensor is 25°C or lower, defrosting is carried out regardless of the current starting conditions.

2. Operation

   ①During defrosting, the outdoor unit turns on the compressor and turns off the outdoor unit fan and the reversing valve.

   ②The indoor unit fan operates at LOW for 30 seconds after defrosting starts. After this, the indoor unit fan turns off until defrosting is complete.

   (During defrosting, the louver of the indoor unit stays at the horizontal.)

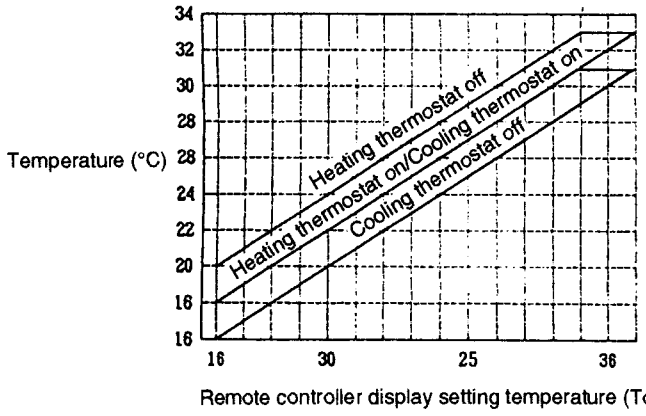
9 Indoor thermostat cheractaristics

1. Thermostat characteristics during cooling and heating modes

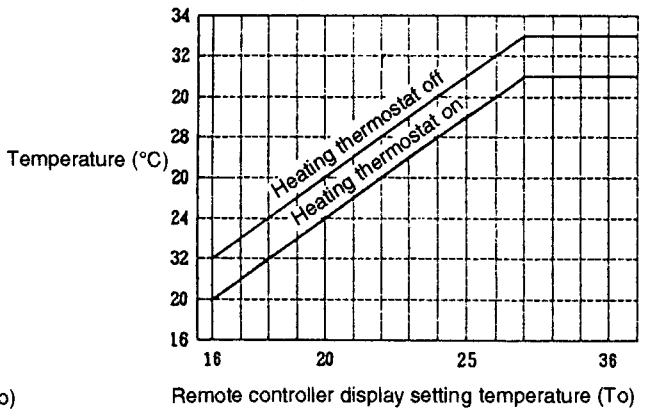
Operation mode	Setting temperature (To)	Room temperature (°C)		
		Operation	Differential	
			2.0K	4.0K
Cooling	16	O N	18.0	———
		O F F	16.0	———
	31	O N	33.0	———
		O F F	31.0	———
Heating *1	16	O N	18.0	20.0
		O F F	20.0	22.0
	29~31 *1(27~31)	O N	31.0	31.0
		O F F	33.0	33.0

*1 If jumper wire J3 on the indoor unit circuit board is disconnected, the thermostat characteristics during heating become 2 K or higher.

Thermostat characteristics during cooling and heating modes



Thermostat characteristics during heating mode (when jumper wire J3 is disconnected)



NOTE: If the remote control unit display setting temperature (To) is 29°C or higher, the heating thermostat turns on when the room temperature is 31°C.

2.Thermostat characteristics during dry mode

During dry mode operation, cooling mode operation is carried out in accordance with the indoor temperature as shown in the table below.

Mode	Indoor Temperature (°C) T	Operation details	
①	T ≧ 28	Cooling thermostat on	LO, Louver horizontal
*②	28 > T ≧ 25	Cooling thermostat on 10 min./fan 5 min., alternate operation	LO, Louver horizontal
*③	25 > T ≧ 21	Cooling thermostat on 5 min./fan 10 min., alternate operation	LO, Louver horizontal
④	21 ≧ T	Cooling thermostat off	LO, Louver horizontal

(Differential is 1.5 K)

*When modes ② and ③ are active, dry mode operation starts when the cooling thermostat turns on. When modes ② and ③ have been stopped, the 10 min./5 min. times have no relevance. However, if the indoor temperature is less than or equal to the remote control unit setting temperature, mode ④ is forcibly activated.

3.Thermostat characteristios during automatic changeover operation

①Settings at the start of automatic changeover operation

When operation starts, or when operation changes from some other mode to automatic changeover mode, it starts at the temperature characteristics given in the table below.

Indoor temperature (T) °C	Initial setting
T < remote controller display temperature - 2 (°C)	Heating mode operation, thermostat on
Remote controller display temperature ≧ T	Heating mode operation, thermostat off (fan mode operation)
Remote controller display temperature ≦ T	Cooling mode operation, thermostat off (fan mode operation)
Remote controller display temperature + 2 (°C) < T	Cooling mode operation, thermostat on

2 (°C): Thermostat differential

②Thermostat characteristics when switching between cooling and heating mode operation

Switching between cooling mode and heating mode operation is carried out as shown in the table below. However, during automatic operation, the operation does not change again until 10 minutes after the thermostat has switched off in either cooling mode or heating mode.

(The 10-minute timer is canceled when operation is changed to another mode or when operation stops and the thermostat turns on.)

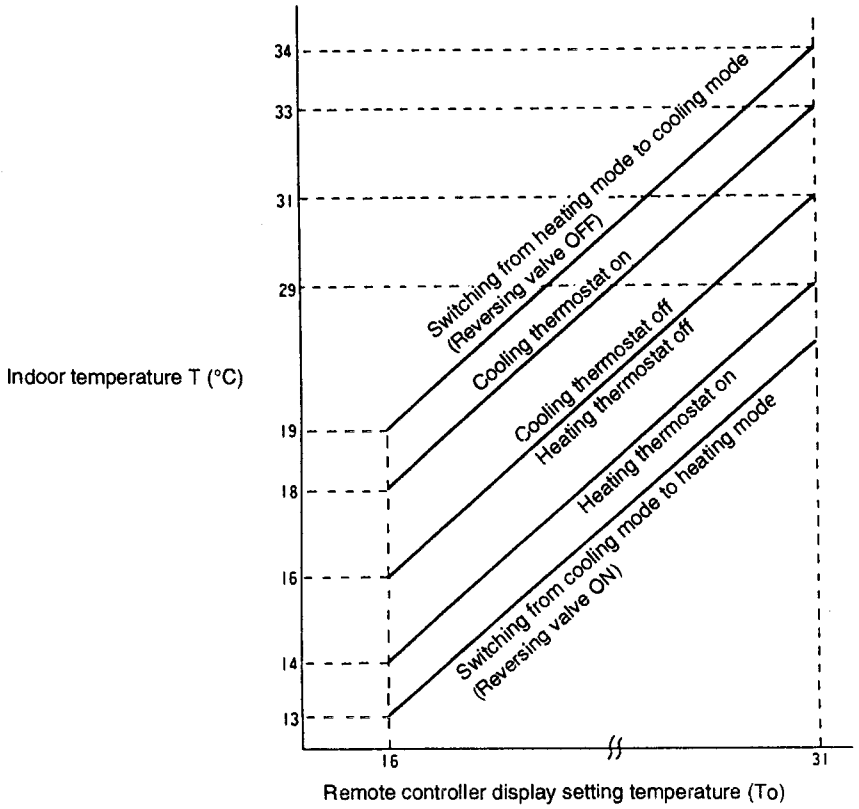
Indoor temperature (T) °C	Operation switching
T ≧ Remote controller display temperature + 3 (°C)	Heating mode → Cooling mode
T ≦ Remote controller display temperature - 3 (°C)	Cooling mode → Heating mode

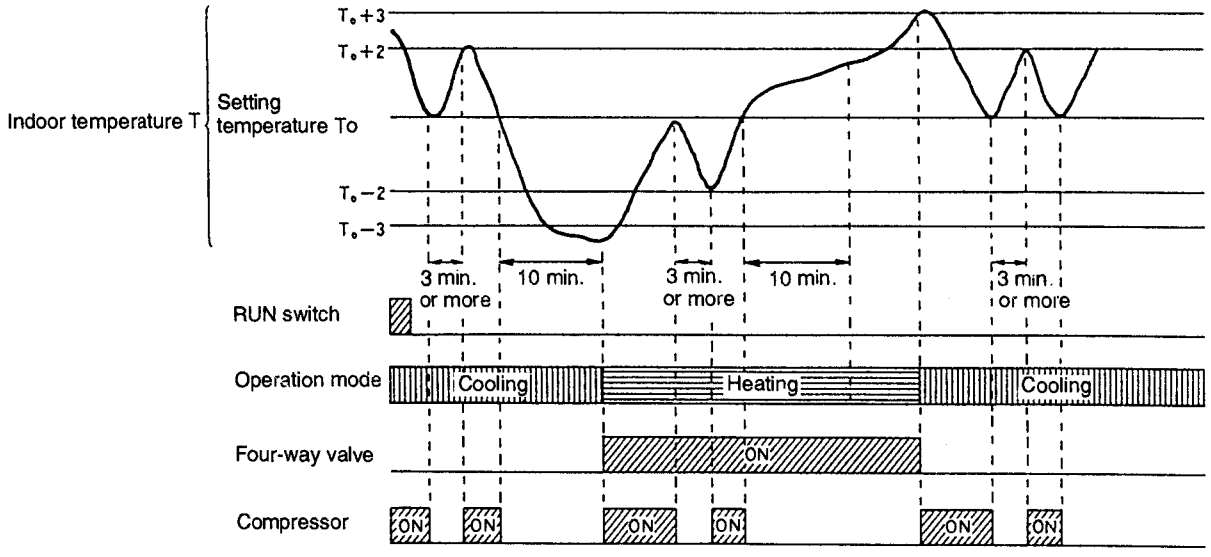
③Thermostat characteristics during cooling mode and heating mode operation

The thermostat on/off characteristics in both operation modes are given in the table below.

Operation mode	Indoor temperature (T) °C	Operation
Cooling mode	T > Remote control unit display temperature + 2 (°C)	Cooling thermostat on
	T ≦ Remote control unit display temperature	Cooling thermostat off
Heating mode	T < Remote control unit display temperature - 2 (°C)	Heating thermostat on
	T ≧ Remote control unit display temperature	Heating thermostat off

Indoor temperature thermostat characteristics during automatic changeover operation





Automatic cooling/heating mode operation time chart

[10] Indoor unit fan control

1. Fixing at LO, MED or HI

   When LO, MED or HI is set, the relay switches and operation is carried out at that setting.

2. Automatic fan speed

   When set to AUTO, the indoor unit fan operation changes as shown in the table below.

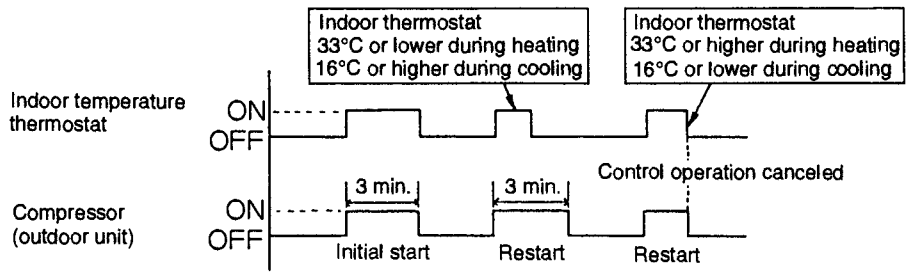
(Indoor temperature)–(Setting temperature) (Units: K)

	HI	MED	LO
Cooling mode	+ 3 or higher	+ 1.5 ~ 3	Less than + 1.5
Heating mode	- 3 or lower	- 1.6 ~ -3	More than -1.5
Fan mode	MED irrespective of temperature		

[11] Forcod operation during restart

The compressor will not stop operating for 3 minutes after cooling mode or heating mode operation starts, even if the indoor unit thermostat turns off.

(However, the compressor will stop operating during this time if the indoor unit air intake temperature exceeds 33°C during heating mode operation or if the indoor unit air intake temperature drops below 16°C during cooling mode operation.)



13 Outdoor unit fan excess heat dissipation control

①Start

Carried out when the compressor switches from on to off (when the remote control unit is used to stop operation)

②Operation

The outdoor unit fan runs at SUPER HI speed for approximately 60 seconds and then stops.

14 Discharge temperature control

①Operation

When the discharge temperature sensor detects a temperature of 100°C or higher during cooling mode operation, the liquid bypass valve is turned on.

②Canceling

When the discharge temperature sensor detects a temperature of 70°C or lower, the liquid bypass valve is turned off.

15 Emergency operation

When the emergency operation switch (DSW1) on the outdoor unit printed circuit board is set to the emergency setting, then emergency operation is enabled. This allows normal operation to continue, with all abnormalities other than a discharge temperature abnormality, high pressure abnormality or overcurrent abnormality being ignored.

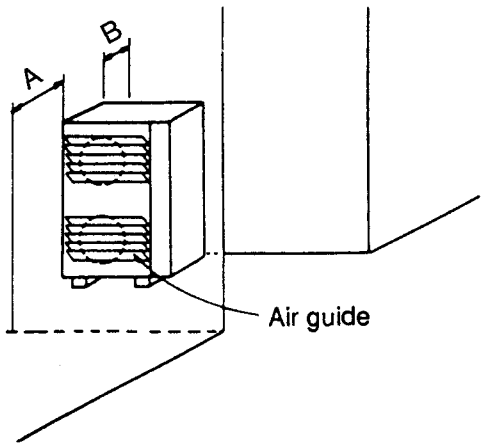
16 DIP switch settings

• Indoor unit printed circuit board (DSW1)

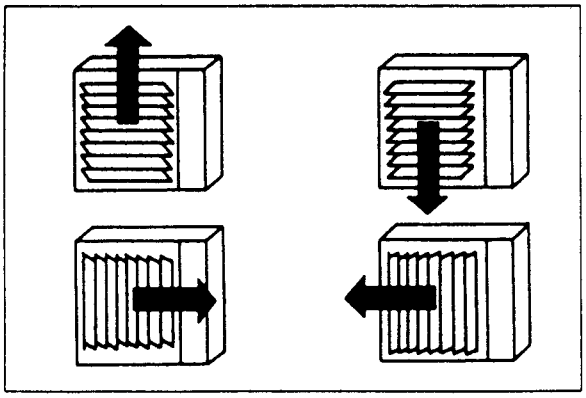
No.	Setting type	Factory shipment	Remarks
1	Group address setting (twin/triple address setting)	OFF	When group operation is being carried out using the remote controller, this address is set in order to control the order of starting for the indoor units. (If No. 8 is ON, twin/triple address setting is carried out.)
2		OFF	
3		OFF	
4		OFF	
5	Automatic restart	ON	When set to ON, operation after a power outage resumes at the settings which were in effect before the outage. (The backup time is semipermanent.)
6	Filter sign time	ON	When set to ON, the filter sign times can be set to 2,500 times.
7	Louver control	*ON	When set to OFF, louver control is disabled.
8	Twin/triple slave unit setting	OFF	When set to ON, the unit is designated as a slave unit.

■ Air guide

In order to avoid hindering the dissipation of heat, if the distance between the front of the outdoor unit and an obstruction is A dimension but there is no obstruction to the right, left, or above the outdoor unit, use this air guide to provide a smooth flow of the exhaust air.



- **The airflow can be changed to any diroction by changing the direction in which the air guide is mounted.**



Air guider for outdoor units

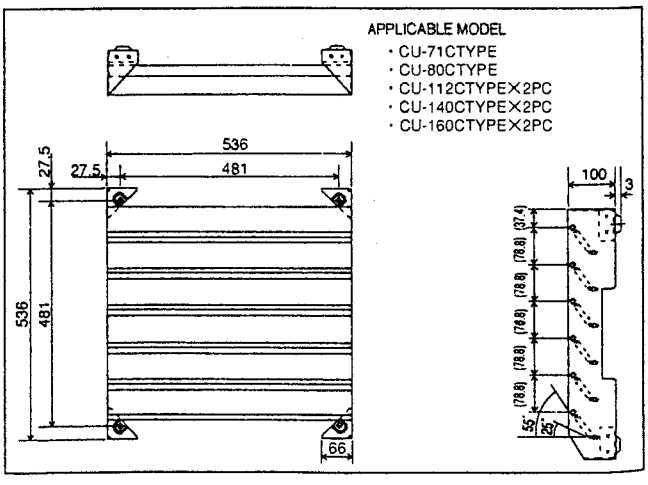
MODEL NAME		PART NUMBER	A dimension	B dimension
CU-71C52HP CU-71C52XP CU-80C52HP CU-80C52XP	CU-71C02HP CU-71C02XP CU-80C02HP CU-80C02XP	CZ-03AGA	50cm	10cm
CU-112C52XP CU-140C53XP CU-160C53XP	CU-112C02XP CU-140C03XP CU-160C03XP	CZ-06AGA	100cm	20cm

NOTE When installing the air guider

1) If directing the air upward, there should be no obstacles above the outdoor unit
2) If directing the air to the left or right, there should be no obstacles at the left or right of the outdoor unit.
3) Never use the air guider in locations which are subject to snowfall. If snow get inside the air guider, it could cause the fan to freeze up.
4) If connecting outdoor units in series, direct the air flow upward.

CZ-03AGA,CZ-06AOA

OUTSIDE DIMENSIONS



INDOOR UNIT
INSTALLATION MANUAL

MODEL NAME

CS-71E96JP CS-112E96JP
CS-80E96JP CS-140E96JP
CS-160E96JP

Precautions in terms of safety

Carry out the installation work with reliability after throughout reading of this "Precautions in terms of safety".

- Precautions shown here are differentiated between **⚠Warnings** and **⚠Cautions**, those that have much chance for leading to significant result such as fatality or serious injury if wrong installation should be carried out are listed compiling them especially into the column of **⚠Warnings**.
  However, even in the case of items which are listed in the column of **⚠Cautions**, such items also a chance for leading to significant result depending on the situations.
  In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration

⚠	This mark means "Caution" or "Warning".
⊘	This mark means "Prohibition".
❗	This mark means "Compulsion".

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of dry run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
  In addition, request the customer to keep this manual for installation work together with instruction manual.

⚠ Warnings

▲ As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.

▲ Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.

▲ Electric work shall be carried out by the person qualified as an electric worker according to "Technical standards regarding electric installation", and manual for installation work, and use exclusive circuit without fail. Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.

▲ Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

▲ If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the event of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.

▲ Securely aftach the protective covers for the outdoor unit connection cable and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.

⚠ Warnings

▲ If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.

▲ Once installation work is complete, check that there are no refrigerant gas leaks. If refrigerant gas leaks into the room and comes into contact with sparks or flames from a fan heater, stove or kitchen range, it will cause toxic gases to be generated.

⚠ Cautions

▲ Carry out earthing work
Do not connect the earth return to the gas pipe, water line pipe, lightening rod, earth return of the telephone.
Imperfection in earth return may lead to electric shock.

▲ Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakage should arise and the gas builds up around the unit, such situation may lead to ignition.

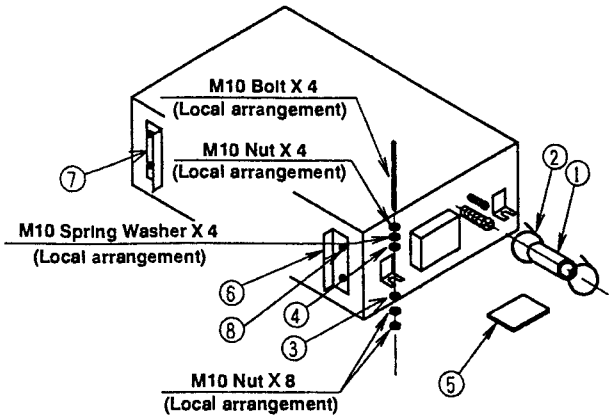
▲ Mounting of the earth leakage breaker is required. Omission in mounting of the earth leakage breaker may lead to electric shock.

▲ Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.

▲ Position the indoor units, outdoor units, power cords and indoor/outdoor unit connection cables so that they are at least 1 meter away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 meter.)

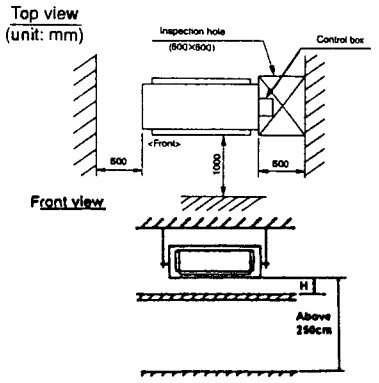
1. ACCESSORIES PACKED IN THE INDOOR UNIT CONTAINER

NO.	Parts name	Q'ty
1	Thermal insulator for refrigerant pipe	1
2	Hose clip for thermal insulator	3
3	M10 Flange washer	4
4	M10 Flat washer	4
5	Thermal insulator for drainage hole	1
6	Duct flange side R	1
7	Duct flange side L	1
8	Screw	4



- (6) and (7) should be installed when the duct will be installed at the return hole.

2. SELECTING THE LOCATION OF THE INDOOR UNIT

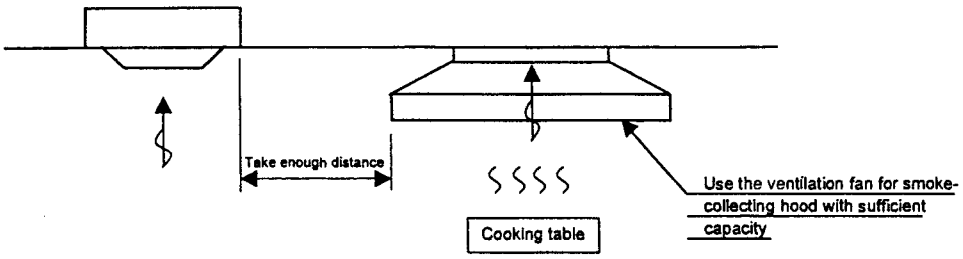


- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place shall be able to inspect the unit as the figure.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage. (Suitable dimension "H" is necessary to get slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- Do not install the indoor unit in a laundry. (Electric shocks may result.)
- The indoor unit must be free from any obstacles in path of air inlet and outlet, and must allow spreading of air throughout the room.
- The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
- Prepare a power outlet for the indoor unit nearby.
- The indoor unit must be at least 3m away from any noise-generating equipment. The electrical wiring must be shielded with steel conduit.
- If the power supply is subject to noise generation, add a suppressor.

✳ If the height from floor to ceiling exceeds three meters, air flow distribution deteriorates and the effect is decreased.

NOTE • Throughly study the following installation locations:

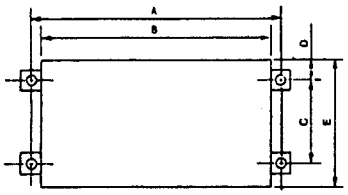
1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the turbo fan, the fin of the heatexchanger and the drain pump, resulting in heat exchange reduction, spraying, dispersing of water drops, drain pump malfunction, etc.
   - Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient oapaoity so that it draws oily steam which should not flow into the suction of the air conditioner.
   - Make enough distance from cooking room to install the airconditioner in such place where it may not suck in oily steam.



2. Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.
3. Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
4. Avoid places where sulfurous acid gas or corrosive gas is generated.
5. Avoid places near high frequency generators.

3. INSTALLATION OF INDOOR UNIT

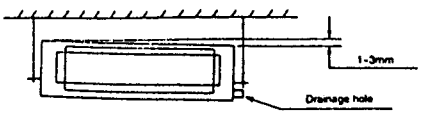
POSITION OF SUSPENSION BOLT



(unit: mm)

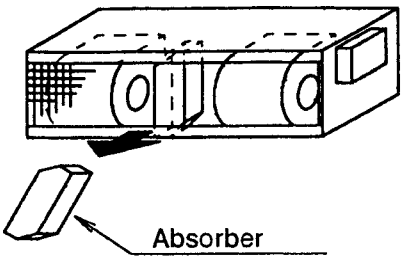
	A	B	C	D	E
CS-40E96JP CS-50E96JP	840	780	500	34	565
CS-71E96JP CS-80E96JP	1060	1000	523	64	650
CS-112E96JP CS-140E96JP CS-160E96JP	1560	1500	523	64	650

- Apply a joint-canvas between the unit and duct to absorb unnecessary vibration.
- Install the unit leaning to a drainage hole side as a figure for easy water drainage.



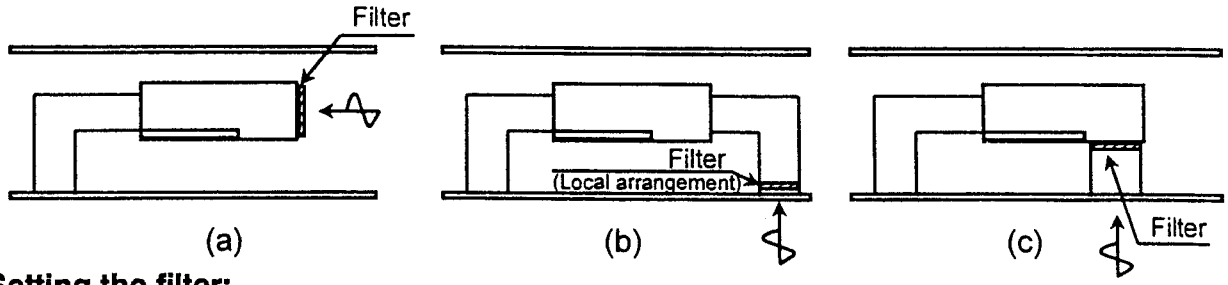
⚠ Caution

- Remove the absorber at air return hole before installation.



INSTALLATION OF DUCT

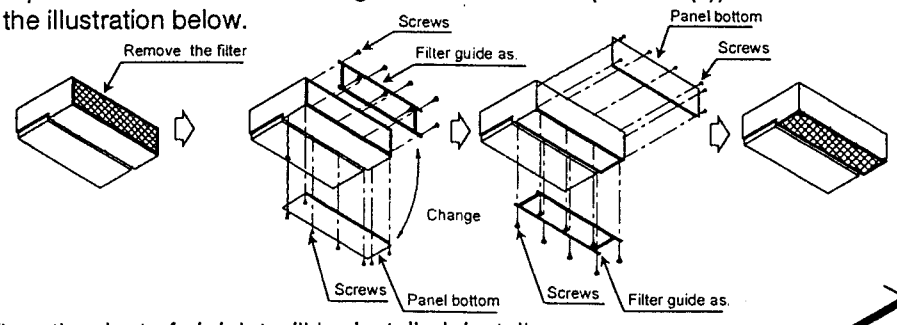
1. The duct of the air inlet could be installed by the three situations as shown in the illustration below (a) ~ (c).



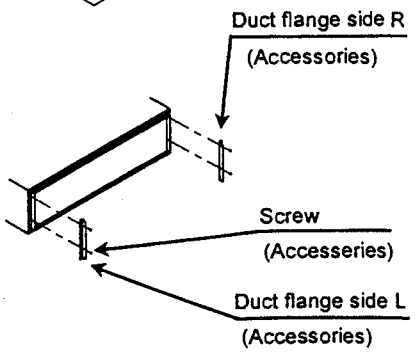
Setting the filter:

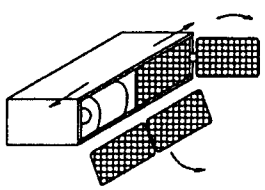
Case of (a): Reserve the filter and not install the duct of the air inlet.
Case of (b): Remove the filter (local arrangement) and install the duct of the air inlet.
Case of (c): Change the panel bottom to install the duct of the air inlet.

2. The panel bottom could be changed into the air inlet (case of (c)) as shown in the illustration below.



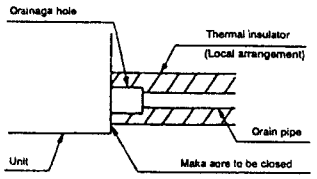
3. When the duct of air inlet will be installed, install the duct flange side R & L to the air inlet with accessories as shown in the illustration.
4. The filter could be removed from any one of three directions as shown in the illustration below.

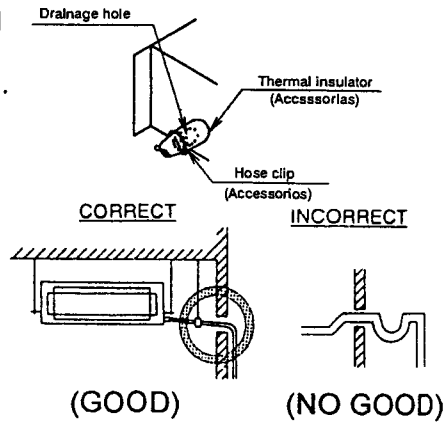




4. INDOOR UNIT DRAIN PIPING

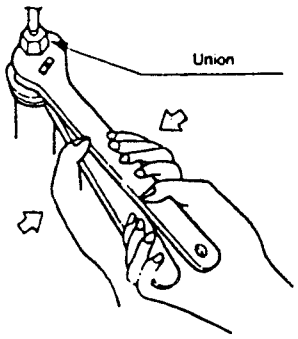
- The unit has two drainage holes at both side.
  The drainage hole without connection needs seal and thermal insulation with accessories.
- Always lay the drain with downward inclination (1/50 to 1/100). Prevent any upward flow or reverse flow in any part.
- 5mm or thicker formed thermal insulator shall always be provided for the drain pipe.





5. PIPING CONNECTION

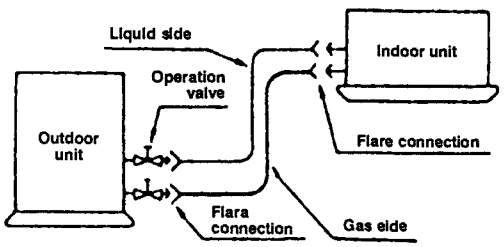
1. Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times. (This will result in hardening the pipe.)
2. After deforming the piping, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.
3. Connect pipe to the service valve or ball valve which is located below the outdoor unit.
4. After completed the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.



MODEL NAME	Liquid side piping	Gas side piping
CS-40E96JP	ø 6.35	ø 12.7
CS-50E96JP	ø 6.35	ø 12.7
CS-71E96JP	ø 6.35	ø 15.88
CS-80E96JP	ø 9.52	ø 15.88
CS-112E96JP CS-140E96JP CS-160E96JP	ø 9.52	ø 19.05

Vacuum drying

After completing the piping connection, execute vacuum drying for the connection piping and the indoor unit.
The vacuum drying must be carried out using the service ports of both the liquid and gas side valves.



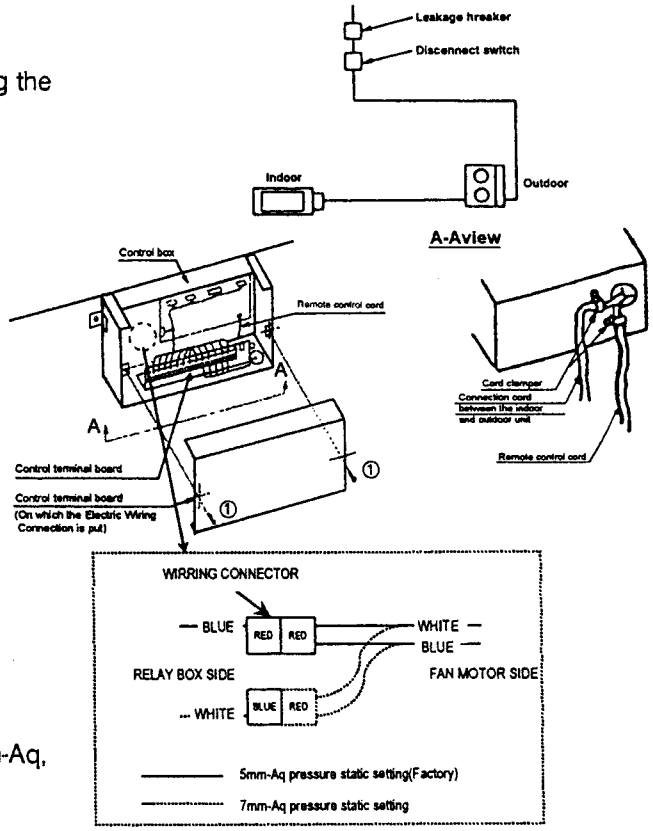
CAUTION

Use two wrenches and tighten with regular torque.

Flare nut fastening torque N-m (kgf-cm)			
ø 6.35mm	18 (180)	ø 15.88mm	65 (650)
ø 9.52mm	42 (420)	ø 19.05mm	100 (1000)
ø 12.7mm	55 (550)		

6. ELECTRICAL WIRING

- All wiring must comply with local requirements.
- Select a power source that is capable of supplying the current required by the air conditicner.



WIRING CONNECTION

<INDOOR UNIT>

- Remove the control box cover for electrical connection between the indoor and outdoor unit. (Remove two screws ①).
- Use the cord clamper to fix the cord.

Caution

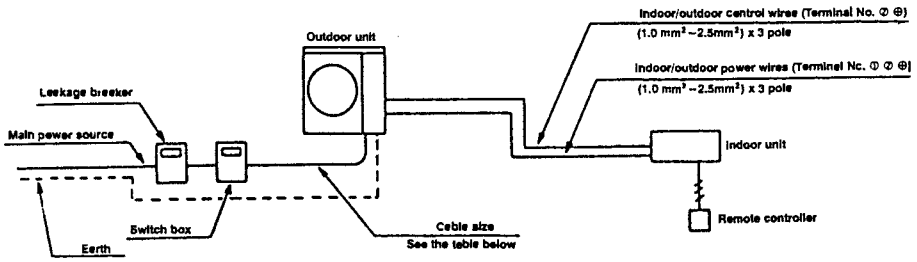
Make sure that screws of the terminal are free from looseness. Fastening torque
M4 ... 118N•cm (12kgf•cm)
M5 ... 196N•cm (20kgf•cm)

STATIC PRESSURE SETTING

- The static pressure of factory setting is 5mm-Aq.
- When you require the higher static pressure 7mm-Aq, change the connector in the relay box.

7. ELECTRICAL WIRING

1. All wiring must comply with LOCAL REGULATIONS.
2. Select a power source that is capable of supplying the current required by the air conditioner.
3. Feed the power source to the unit via a distribution switchboard designed for this purpose.
4. Install a leakage breaker if the electrical wiring is subject to excessive moisture.
5. The terminal screws inside the control box may be loose due to vibration during transport. Check the screws for loose connection. (Running the air conditioner with loose conneotion can overload and damage electrical components.)
6. Check that the cable size, overcurrent devices, and switch specifications comply with those given in the table.
   - The wire diameters in the table indicate values compatible with a metal or resin conduit that can pass up to three such wires.
   - The overall length in the table indicates a value when the main power cord is subject to a voltage drop of 1%.
7. Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
8. Be sure to connect the wires correctly to terminal block with connecting the crimp type ring terminal to the wires.



⚠ **Warning**	All electric work must be carried out by a qualified technician according to proper technical standards for electrical work and according to installation manual for installation work, and proper specified circuits must be used. If circuits with insuffucient capacity are used, or if electrical work is not carried out properly, electric shocks or fire may result.

- Use a standard power cord for Europe (such as H05RN-F or H07RN-F which confirms to CENELEC (HAR) rating specifications.)

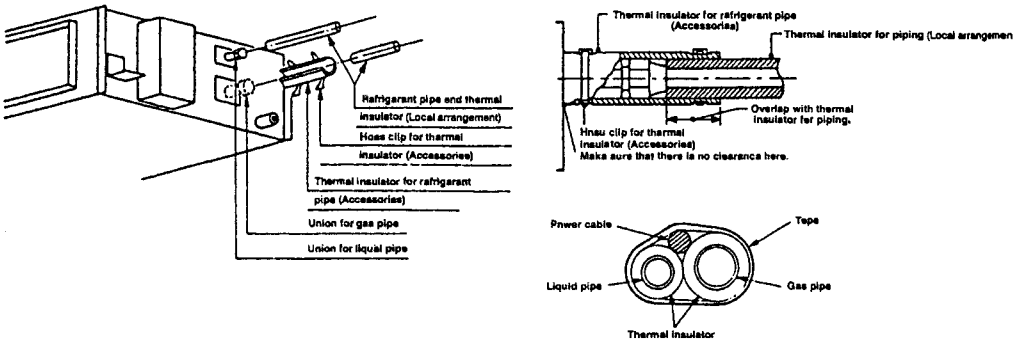
Cautions

- Where ground work (earth) is carried out, do not connect the ground return to the gas pipe, water line pipe, grounded circuit of the telephone and lightening rod, or ground circuit of other product in which earth leakage breaker is incorporated. (Such action is prohibited by statute, etc.)
- In order to prevent malfunction (noise generation) of the equipment, carry out the wiring of the control cable for indoor and outdoor units (signal cable) isolating it from other power cable with separate cable.
- Use a standard power cord for Europe (such as H05RN-F or H07RN-F which conforms to CENELEC (HAR) rating specifications.)

8. NEAT INSULATION

THERMAL INSULATION

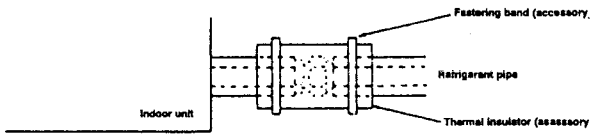
<INDOOR UNIT>


Refrigerant pipe and thermal insulator (Local arrangement)
Hose clip for thermal insulator (Accessories)
Thermal insulator for refrigerant pipe (Accessories)
Union for gas pipe
Union for liquid pipe
Thermal insulator for refrigerant pipe (Accessories)
Thermal insulator for piping (Local arrangemen
Overlap with thermal insulator for piping.
Hnau clip for thermal insulator (Accessories)
Make sure that there is no clearance here.
Power cable
Tape
Liquid pipe
Gas pipe
Thermal insulator

<REFRIGERANT PIPE>

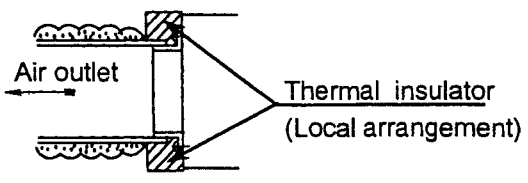
- Insulate and tape both the gas piping and liquid piping.

1. For the refrigerant and drain pipings, execute referencing the piping procedure label packed with the unit body.
2. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance (over 120 degree C).



3. Precautions in high humidity circumstance:
   This air conditioner has been tested according to the "JIS Standard Conditions with Mist" and confirmed that there is not any fault. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23 degree C), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:
   - Heat insulation material to be prepared ... Adiabatic glass wool with thickness 10 to 20mm
   - Stick glass wool on all air conditioners that are located in ceiling atmosphere.
   - In addition to the normal heat insulation (thickness: more than 8mm) for refrigerant piping (gas piping: thick piping) and drain piping, add further 10mm to 30mm thickness material.

4. The duct connection of the air outlet needs thermal insulation.



9. SELF-DIAONOSES FUNCTION

- The LED1 (green) illuminates to indicate that the microprocessor on the microprooessor oirouit board is operating normally. If the LED is switched off or is flashing irregularly, check the power supply, and turn it off and then back on again.

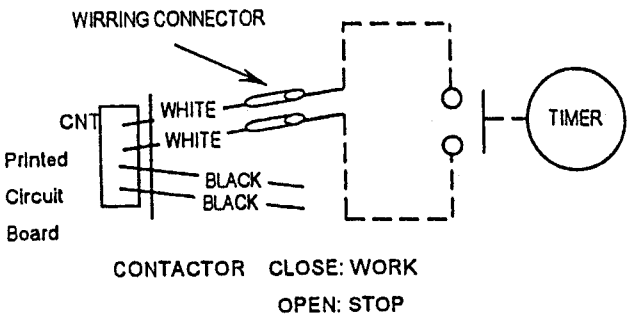
- The display screen on the wired remote control unit and the self-diagnosis LEDs (red) on the printed circuit board in the indoor unit can be used to indicate where the location of a problem is. Refer to the table below to remove the cause of the problem, and then re-start the air conditioner unit.
- If the "CHECK" display on the wired remote control unit is flashing, the details of the problem(s) are displayed on the timer display screen each time the CHECK button is pressed. Further details of the problem can be displayed by pressing the TIMER ON/OFF button while the general problem details are being displayed.
- If the "CHECK" display on the wired remote control unit is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER, FORWARD or BACK buttons. Press the CHECK button once more to return to the normal display.
- If the problem disappears and operation returns to normal, the CHECK display on the remote control unit will switch off, but the self-diagnosis LED will remain illuminated until operation is resumed.

Wired remote control unit display		Indoor unit circuit board LED 2	Outdoor unit circuit board LED	Location of problem	Check location
Abnormal display	Detail display				
F15	- 01	O	For further details, refer to the section on outdoor unit self-diagnosis.	Drain level float switch problem	Drain pump and drain pipe, indoor unit connectors CN6 & CN10, or relay connector
F16	- 01	O		Louver switch problem	Louver motor, veneer panel connection terminal, or indoor unit connectors CN1 & CN6
F17	- 01	O		Option problem	Option connection terminals
F20	- 01	O		Indoor temperature thermistor problem	Indcor temperature thermistor lead wire or indoor unit connector CN1
	- 02	O		Remote contrcl thermistor problem	Remote control thermistor
F21	- 01	O		Pipe temperature thermistor problem (indoor unit side)	Pipe temperature thermistor lead wirs or indoor unit connsctor CN1
F25	- 01	O		Centralized control address overlap problem	Check settings for optional centralized control circuit board address switch
F26	- 01	O		Remote control transmiseion wire open circuit problem	Remote control unit cable and connection terminals
	- 02	O		Remote control transmission problem	Check the transmission wave pattern
F27	- 01	O		Indoor/outdoor unit transmission wire open circuit problem	Indoor/outdoor unit conneotion csble snd connection terminals, or indoor unit and outdoor unit power supplies
	- 02	O		Indoor/outdoor unit transmission problem	Check the transmission wave pattern
F29	- OO	O		Setting problem	Contact the place of purohase.
F30~F49	- OO	O		Outdoor unit problem	Refer to the section on outdoor unit self-diagnosis.

19. USE OF TIMER INPUT•FAN OUTPUT

Refer to the following diagram for connecting to Printed Circuit Board.

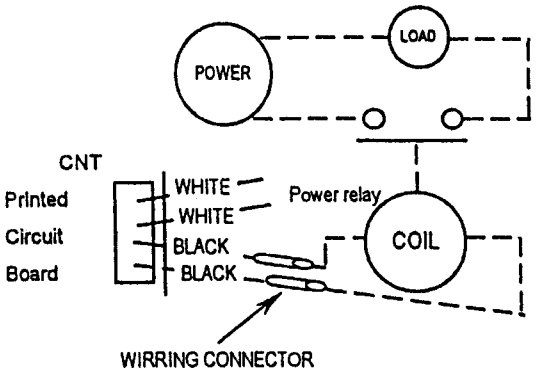
<TIMER INPUT> Connect to the white cord



CONTACTOR CLOSE: WORK
OPEN: STOP

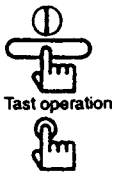
Connect another circuit contactor of the timer.

<FAN OUTPUT> Connect to the black cord
Power relay (arrangement): (coil spec. DC12V 0.9W)



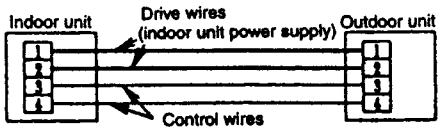
11. TEST OPERATION

- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to "Test Operation" in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation, follow the procedure given below.



  - First, press the RUN button.
  - Then press the TEST button within 1 minute of pressing the RUN button.
  - Next, select the operation modes. (When carrying out test operation, be sure to select cooling mode first, and run the units in this mode for 5 minutes or more.)
  - The temperature of the indoor unit pipes will be shown on the temperature setting display. (At the start of test operation, it may take up to 1 minute for air conditioner number, switching time and other displays to appear.)
  - After operation modes have been selected, momentarily stop the compressor.
  - Press the RUN button or the TEST button once more to cancel test operation mode.

NOTE 1 These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have operated. In such cases, check that the drive wires (connected to terminals [1] and [2]) and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.



NOTE 2 Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE 3 When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. If heating mode is selected first, it may cause problem with operation of the compressor.

NOTE 4 Test operation should be carried out for a minimum of 5 minutes. (Test operation will be canceled automatically after 30 minutes.)

NOTE 5 Test operation mode should always be canceled once test operation itself has been completed.

12. CHECK THE FOLLOWING ITEMS WNEN INSTALLATION IS COMPLETE

- After completing work be sure to measure and record trial run properties, and store measuring data, etc.
- Measuring items are room temperature•outside temperature•suction temperature•blow out temperature•wind speed•wind amount•voltage•current•abnormal vibration•abnormal noise•running pressure•pipe temperature•withstand pressure and air tight pressure.
- As for structure and appearance, check on the below items.

☐ Is circulation of air adequate?
☐ Is draining smooth?
☐ Is heat insulation complete? (refrigerant and drain piping)
☐ Is there any leakage of refrigerant?
☐ Is remote controller switch operated?
☐ Are there any faulty wiring?
☐ Are not terminal screws loosened?
☐ Tightening torque (N.cm {kgf.cm})
M4 ... 118 {12}, M5 ... 196 {20}
M6 ... 245 {25}, M8 ... 588 {61}

13. DELIVERY TO OUR CUSTOMERS

- Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.)

As for work specifications of the outdoor unit, read the WORK INSTRUCTION attached to the outdoor unit.

Wired Remote Control Unit Installation Manual

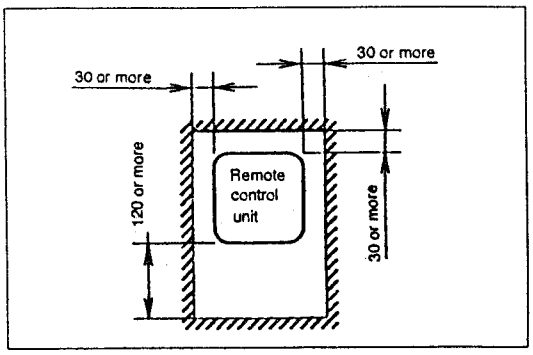
- Before installing the wired remote control unit, be sure to thoroughly read the "Notes with regard to safety" section of the Installation manual provided with the indoor unit.
- After installing the wired remote control unit, carry out a test operation to check that the remote control unit functions properly, and also explain the operation and cleaning procedures to the customer in accordance with the details in the instruction manual. Furthermore, ask the customer to keep this installation manual and the instruction manual in a safe place for later reference.

1.Accessories supplied with wired remote control unit

Name	Qty	Diagram	Use	Name	Qty	Diagram	Use
Remote control unit	1		Operating the indoor units	4 mm screw	3		Installing the remote control unit to a wall
				M4 screw	3		Installing the remote control unit to an outlet box
Remote control cord	1		Connecting the indoor unit and remote control unit (cord length 10 m)	Round terminal	2		Connecting to indoor unit terminal block

2.Notes regarding wired remote control unit setting-up location

- Select a place where the remote control unit can be operated easily (after obtaining approval from the building's owner).
- Install in a place which is away from direct sunlight and as free from humidity as possible.
- Install in a place which is as flat as possible to avoid warping of the remote control unit. (If installed to a wall with an uneven surface, damage to the LCD case or operation problems may result.)
- Install in a place where the LCD can be seen easily. If the remote control unit is installed somewhere which is too low or too high, it may be difficult to read the LCD. (Standard height from the floor is 1.2 to 1.5 meters.)
- Avoid installing the remote control cord near refrigerant pipes or drain pipes.
- Install the remote control cord at least 5 cm away from other electric wires (including stereo and TV cables) to avoid mis-operation (electromagnetic noise).
- If passing the remote control cord through a wall, be sure to install a water trap above the cord.
- For twin and triple types, only the main unit can be connected to the remote control unit. (The indoor unit connected to the remote control unit becomes the main unit, and connection is not possible to the sub units.)
- Allow sufficient space around the remote control unit as shown in the illustration at right.
  Secure the remote control unit lower case to the wall or to an outlet.

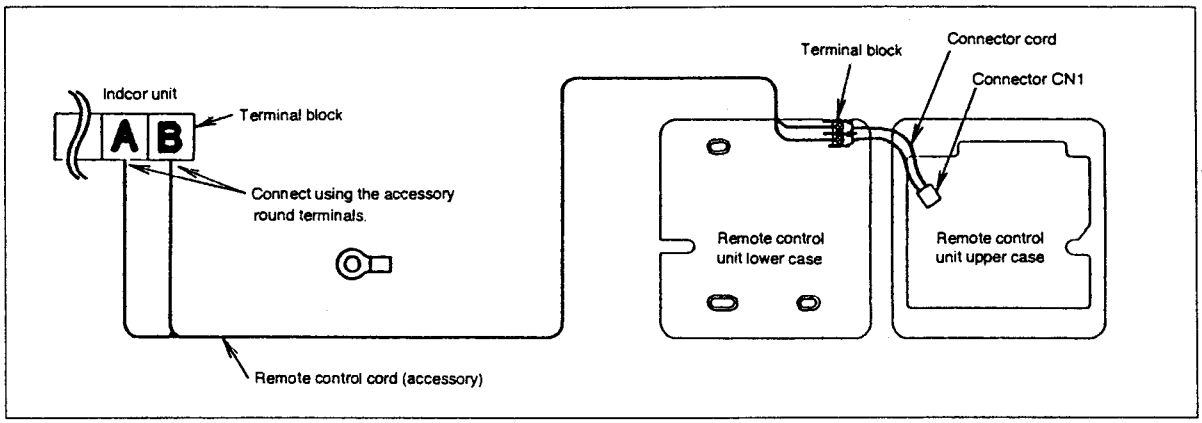


3.Remote control unit installation

- Be sure to turn off the main power before installing and connecting the remote control unit.
  (If the remote control unit is connected while the power is still turned on, the remote control unit displays may not appear.)
  If no displays appear on the remote control unit, check while referring to "If no remote control unit displays appear" in "5. Test operation".
- The remote control cable is live during use, so take care not to short it.

Remote control unit wiring

- Connect the indoor unit and the remote control unit as shown in the illustration below.
- The remote control unit cord is non-polar.
- At the time of shipment from the factory, the connector cable used to connect the terminal block and connector CN1 is disconnected. When connecting the remote control unit wiring and installing the remote control unit, be sure to connect the cord to connector CN1.

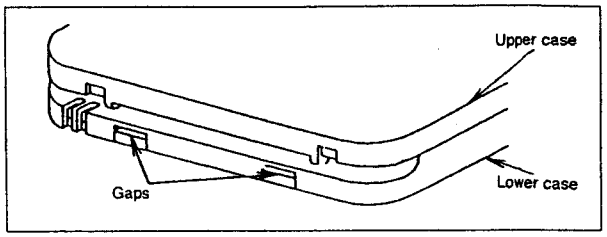


NOTE

The maximum possible length for the remote control cord is 200 meters.

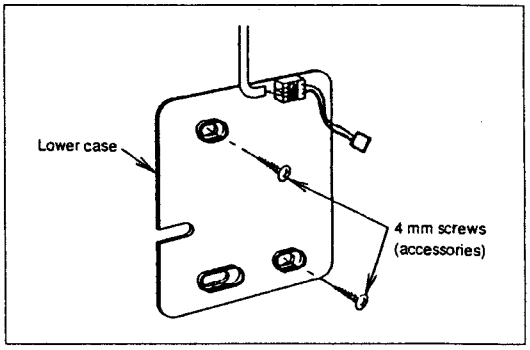
Remote control unit installation precedure

- Remove the remote control unit lower case.
  (Insert a flat-tipped screwdriver or similar 2 to 3 mm into one of the gaps at the bottom of the case, and then twist the screwdriver to open. [Refer to the illustration at right.])
  Be careful not to damage the lower case.
- Secure the lower case to the wall or outlet box.
  (Refer to the illustration at right for the embedded and exposed positions for the remote control cord.)



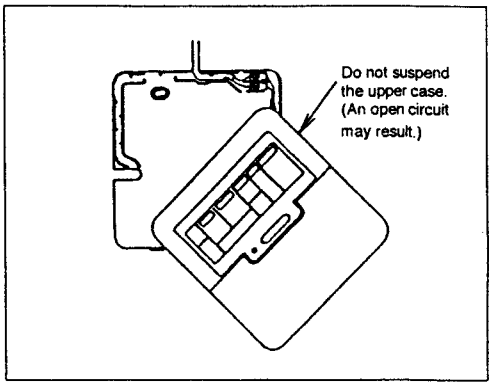
NOTE

★Be sure to use only the accessory screws.
★Do not bend the lower case when tightening the screws. (If the screws are overtightened, damage may result.)
★Do not remote the protective tape which is affixed to the upper case circuit board.



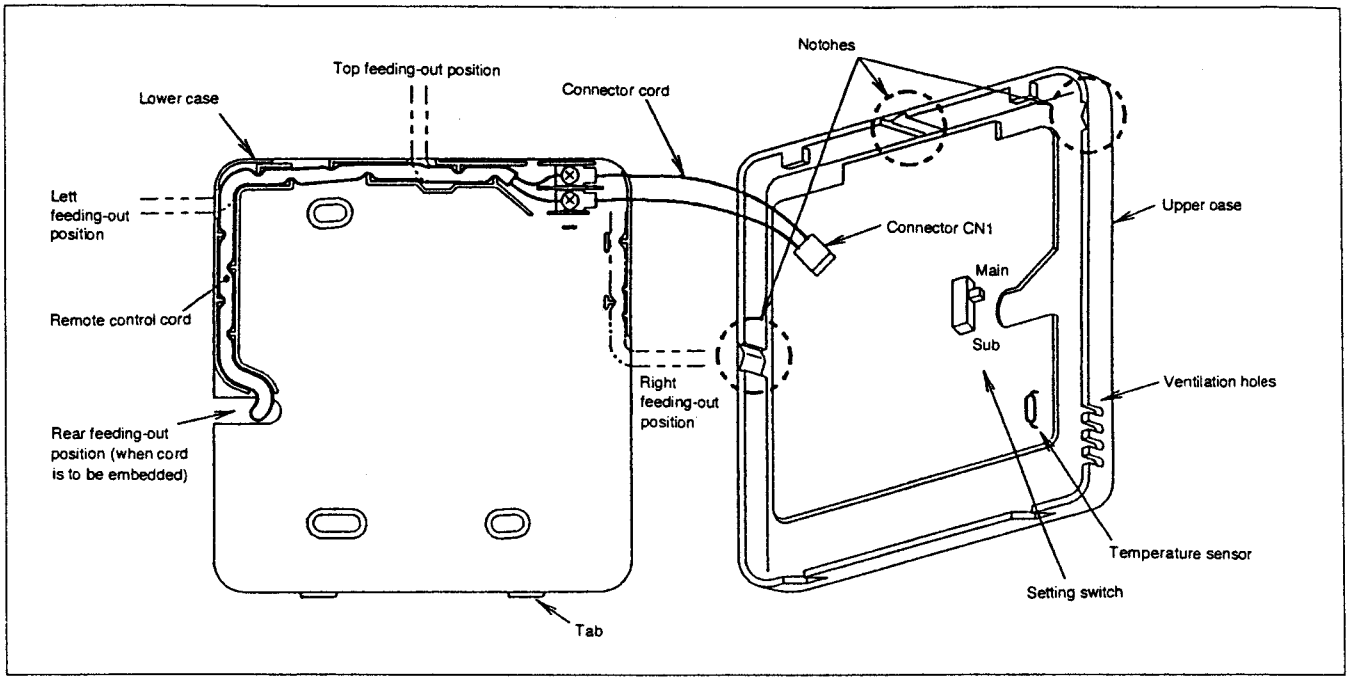
- If installing the remote control unit with the remote control unit cord exposed, use pliers to cut a notch into the upper case. (The feeding-out direction can be either up or to the left or right.)

- Route the remote control cord inside the lower case in accordance with the intended feeding-out direction. (Refer to the illustration below.)
  Securely connect connector CN1. (If it is not connected, the remote control unit will not operate.)

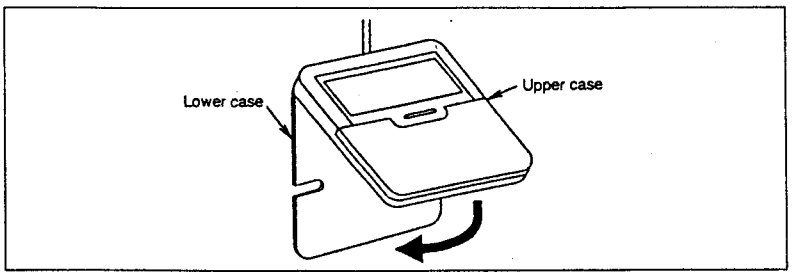


NOTE

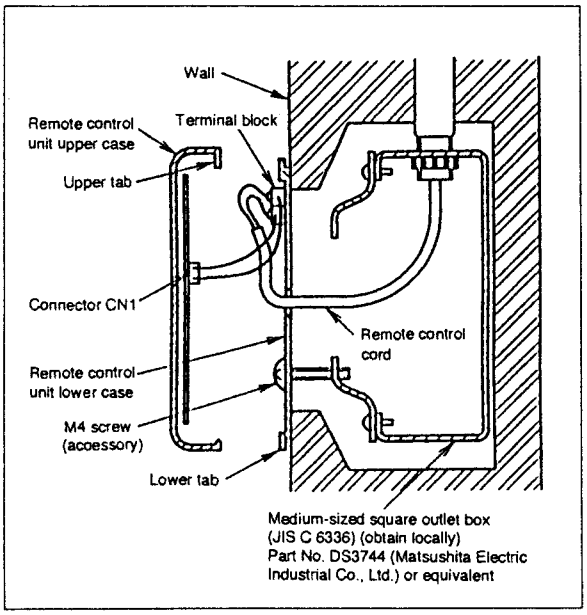
★After connecting the connector, do not suspend the upper case by its own weight, otherwise the connector cord may break.

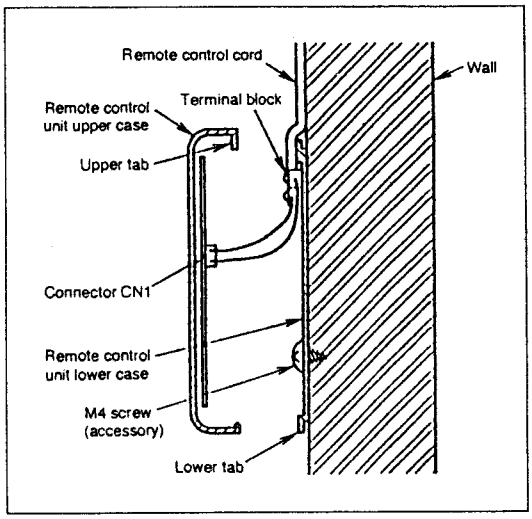


- If controlling using two remote control units, refer to "Control using two remote control units" in "4. Settings".
- Secure the upper case to the lower case.
  (Hook the upper tab of the upper case into the lower case, and then push the upper case until it snaps shut onto the lower case tab, while being careful not to clamp the remote control cord and the connector cord.)



If remote control cord is omboddod	If installing with the remote control cord exposed
1. Embed an outlet box (JIS C 8336) into the wall, and then secure the remote control unit base plate to the outlet box with the two accessory M4 screws. Make sure that the base plate is flat against the wall at this time, with no bending (looseness). 2. Pass the remote control cord into the box and then install the remote control unit.	1. Secure the remote control unit base plate to the wall with the two accessory 4 mm screws. 2. The feeding-out direction for the remote control unit cord can be either up or to the left or right. (Refer to the illustration above.) After determining the feeding-out direction, use pliers to make a notch in the cover. 3. Route the remote control cord as shown in the illustration above. Pull the cord firmly around the outside of the base plate at this time.

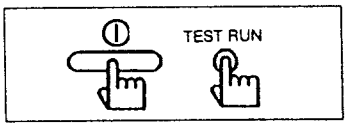

Wall
Remote control unit upper case
Terminal block
Upper tab
Connector CN1
Remote control cord
Remote control unit lower case
M4 screw (accessory)
Lower tab
Medium-sized square outlet box (JIS C 6336) (obtain locally)
Part No. DS3744 (Matsushita Electric Industrial Co., Ltd.) or equivalent



4. Test operation

- Turn on the main power.
- After 3 minutes have passed since the power was turned on, press the STOP/RUN switch on the remote control unit. (No operation occurs within 3 minutes after the power was turned on.)
- Press the TEST RUN switch within 1 minute of pressing the STOP/RUN switch.
- Next, select the operation mode. (Be sure to select cooling mode first, and run the unit in this mode for 5 minutes or more.)
- Press the STOP/RUN switch or the TEST RUN switch to cancel test operation.

★Test operation will be canceled automatically after 30 minutes.



If no remote control unit displays appear

- Check whether LED1 (green) on the indoor unit printed circuit board is illuminated or switched off. If it is switched off, check the circuits on the indoor unit printed circuit board.
- Check once more that the remote control cord is securely connected. (Check for loose terminals, poor contacts, connection positions on terminal block, etc.)
- If the above checks show that nothing is wrong but nothing appears on the remote control unit display, it is possible that the remote control unit was connected while the main power was still turned on. If such is the case, carry out the following.

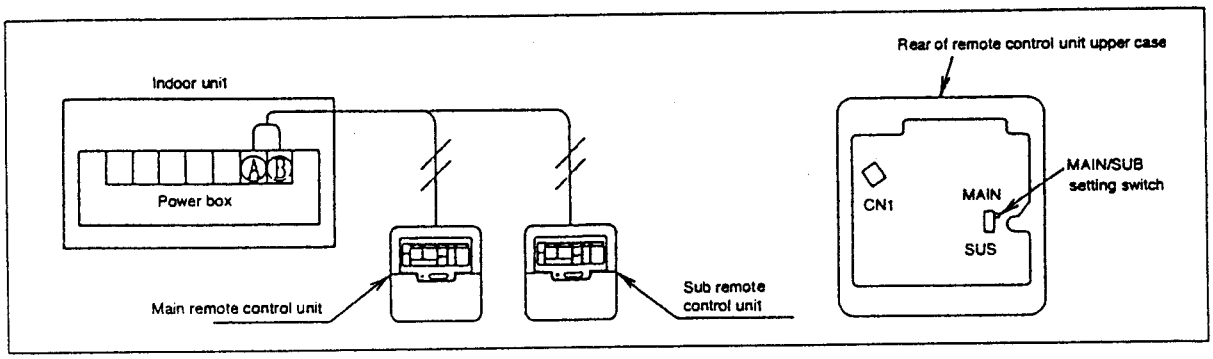
★Set DIP switch (DSW1) Nos. 1 to 4 to the ON position, and then turn the power back on. If the display appears after about 30 seconds, turn DIP switches 1 to 4 back to OFF.

2 Control using two remote control units

- Up to two remote control units can be installed for a single indoor unit, and either remote control unit can be used to operate the indoor unit.
- The indoor unit can be operated with the last switch pressed having priority.

(1) Decide which is to be the main and which is to be the sub remote control unit.
The main or sub status of the remote control unit is set automatically. The MAIN/SUB setting switch can also be used to make the setting manually, however if a manual setting is made, that manual setting has priority. Be sure to turn off the main power before making a manual setting.

(2) Connect the remote control units.
Connect both remote control units to terminals (A) and (B) on the indoor unit terminal block (non-polar).

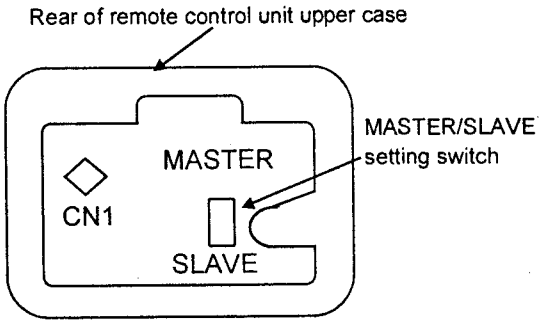


Important Notice

Please set "MASTER/SLAVE" setting switch of wired remote controller on "SLAVE" side when you use it together with below Accessories.

Accessoires list

Accessoires	Connection terminal
CZ-EAN	central control adapter: CZ-04APA
CZ-ESS	
CZ-ESM	
External Input/output	CZ-03APA
External timer	External timer connection terminal
"HA" devices	"HA" connection terminal



Setting method

Please set "MASTER/SLAVE" setting switch of wired remote controller on "SLAVE" side during main power supply switch off.

Note) When remote controller is used with above accessories, it is not possible to use two remote controllers.

PACKAGED AIR CONDITIONERS

INSTALLATION MANUAL

For outdoor unit

As to instructions for installation work of the indoor side unit, see the work manual come with indoor unit.

MODEL NAME

CU-****C5*****
CU-****C0*****
CU-****CT0*****

Precautions in terms of safety

Carry out the installation work with reliability after throughout reading of this "Precautions in terms of safety".

- Precautions shown here are differentiated between **⚠ Warnings** and **⚠ Cautions**, those that have much chance for leading to significant result such as fatality or serious injury if wrong installation should be carried out are listed compiling them especially into the column of **⚠ Warnings**.
  However, even in the case of items which are listed in the column of **⚠ Cautions**, such items also a chance for leading to significant result depending on the situations.
  In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration

⚠ This mark means "Caution" or "Warning".
⃠ This mark means "Prohibition".
⏚ This mark means "Compulsion".

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of dry run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
  In addition, request the customer to keep this manual for installation work together with instruction manual.

⚠ Warnings

▲ As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.

▲ Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.

▲ Electric work shall be carried out by the person qualified as an electric worker according to "Technical standards regarding electric installation", and manual for installation work, and use exclusive circuit without fail. Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.

▲ Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

▲ Securely attach the protective covers for the outdoor unit connection cable and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.

▲ When connecting the piping, do not use let any air or other substances into the refrigeration cycle (pipes) except for the specified refrigerant (R22). If air or other substances should get into the refrigeration cycle, it will cause a drop in system performance; it may also cause abnormally high pressure to build up within the refrigeration cycle, and breakages could thus result.

⚠ Warnings

▲ If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.

▲ Once installation work is complete, check that no refrigerant gas escapes. If it escapes in the room and comes into contact with sparks or flames from a fan heater, stove or kitchen range, it will cause toxic gases to be generated.

⚠ Cautions

▲ Carry out ground work.
Do not connect the ground return to the gas pipe, water line pipe, lightening rod, ground return of the telephone.
Imperfection in ground return may lead to electric shock.

▲ Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakage should arise and the gas builds up around the unit, such situation may lead to ignition.

▲ Mounting of the earth leakage breaker is required. Omission in mounting of the earth leakage breaker may lead to electric shock.

▲ Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.

▲ Position the indoor units, outdoor units, power cords and indoor/outdoor unit connection cables so that they are at least 1 meter away from televisions and radios. This is to avoid problems such as interference with picture and/or sound.(However,note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 meter.)

1. Accessories supplied with outdoor unit

● The following parts are supplied as accessories with each outdoor unit. Check that all accessory parts are present before installing the outdoor unit.

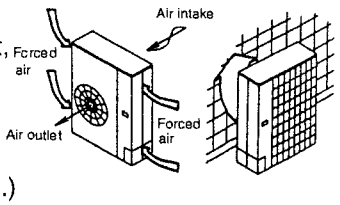
Part name	Qty.	Diagram	Application
Protective bushing	2		For protecting electrical wires
Binding strap	3		For tying electrical wires together

Heat pump-types only			
Part name	Qty.	Diagram	Application
Drain elbow (with Ring seat)	1		For connecting the drain pipe

2. Selecting the outdoor unit installation location

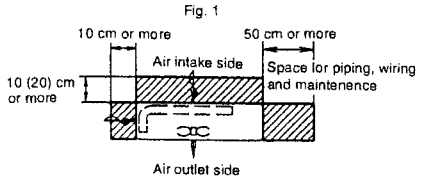
● Select a location which satisfies the following condition, and then confirm with the customer that such a place is satisfactory before installing the outdoor unit.

1. There should be sufficient ventilation.
2. The outdoor unit should be sheltered as much as possible from rain and direct sunlight, and the air should be able to move around so that hot and cold air do not build up.
3. There should be no animals or plants near the air outlet which could be adversely affected by hot or cold air coming out of the unit.
4. The outlet air and operating noise should not be a nuisance to other occupants nearby.
5. The location should be able to withstand the full weight and vibration of the outdoor unit, and it should also be level and safe for the unit to be installed.
6. The intake and outlet should not be covered.
7. There should be no danger of flammable gas or corrosive gas leaks.
8. There should be as little back-ventilation (air blowing directly onto the fan) as possible. (If strong wind blows directly onto the fan, it may cause problems with normal operation.)
   - If you know which direction the prevailing wind comes from during the operating season, set the outdoor unit at a right-angle to this wind direction, or so that the air outlet faces toward a wall or fence.
   - If the re are no obstructions near the outdoor unit and the wind direction is not constant, install an optional air guider.
9. Do not allow any obstacles near the outdoor unit which will interfere with air flow around the air intake and air outlet.
10. If installing in a location which is prone to snowfall, place the installation base as high as possible, and be sure to install a roof or enclosure which does not allow snow to accumulate.
11. Avoid installing the unit in places where petroleum products (such as machine oil), salinity, sulfurous gases or high-frequency noise are present.
12. Be sure to leave enough space around the outdoor unit to maintain proper performance and to allow access for routine maintenance.
    - Allow enough space from any obstacles as shown in Fig. 1.2 below in order to prevent short-circuits from oocurring. (If installing more than one outdoor unit, make the necessary space available as outlined in 14.) However, there should be at least 1 meter of free space above the unit.
    - The height of any obstacles at the air intake and outlet sides should not be greater than the height of the outdoor unit.



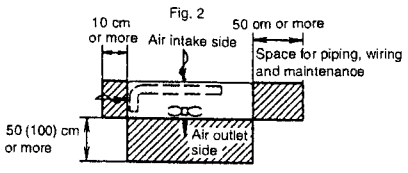
- When facing the air intake side toward a wall

Fig. 1



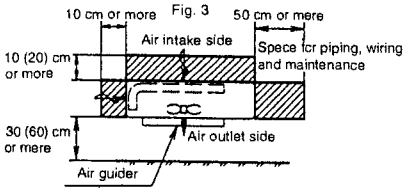
- When facing the air outlet side toward a wall

Fig. 2



- When using an optional air guider for outdoor units

Fig. 3


10 cm or more
Air intake side
50 cm or mere
Spece for piping, wiring and maintenance
10 (20) cm or more
30 (60) cm or mere
Air outlet side
Air guider

※Maintain sufficient space above the unit.

13. If it is not possible to leave 100 (150) cm at the air intake side as shown in Fig. 2, the installation method shown in Fig. 3 can be used if an optional air guider for outdoor units is installed. Install according to the instructions given in the separate instruction manual.

NOTE When installing the air guider

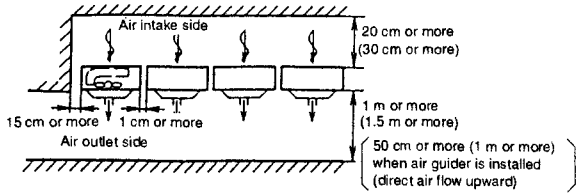
1) If directing the air upward, there should be no obstacles above the outdoor unit.
2) If directing the air to the left or right, there should be no obstacles at the left or right of the outdoor unit.
3) Never use the air guider in locations which are subject to snowfall. If snow gets inside the air guider, it could cause the fan to freeze up.
4) If connecting outdoor units in series, direct the air flow upward.

Air guider for outdoor units

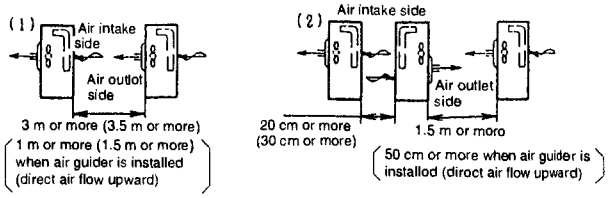
MODEL NAME	PART NUMBER
CU-40C5*** CU-40C0*** CU-50C5*** CU-50C0*** CU-50CT0***	CZ-02AGA
CU-71C5*** CU-71C0*** CU-71CT0*** CU-80C5*** CU-80C0*** CU-80CT0***	CZ-03AGA
CU-100C0*** CU-100CT0*** CU-112C5*** CU-112C0*** CU-112CT0*** CU-140C5*** CU-140C0*** CU-140CT0*** CU-160C5*** CU-160C0*** CU-160CT0***	CZ-06AGA

14. If installing more than one outdoor unit, allow enough space around each unit as shown below.

● When installing units side by side


Air intake side
20 cm or more
(30 cm or more)
1 m or more
(1.5 m or more)
15 cm or more
1 cm or more
Air outlet side
50 cm or more (1 m or more)
when air guider is installed
(direct air flow upward)

● When installing units facing each other


(1)
Air intake side
Air outlet side
3 m or more (3.5 m or more)
1 m or more (1.5 m or more)
when air guider is installed
(direct air flow upward)
(2)
Air intake side
Air outlet side
20 cm or more
(30 cm or more)
1.5 m or more
50 cm or more when air guider is installed (direct air flow upward)

※Maintain sufficient space above the units.

Values inside brackets indicate distances when installing the CU-112/140/160C5✱✱✱ or CU-100/112/140/160C0✱✱✱

● The distances given are above are the minimum distances required in order to maintain proper performance. Allow as much space as possible in order to get the best performance from the units.

3. Transporting and installing the outdoor unit

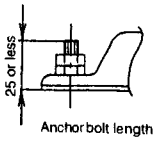
● Transporting

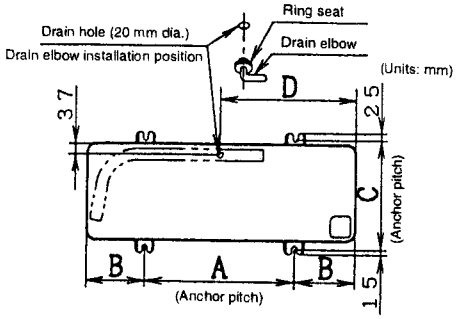
1. The outdoor unit should be transported in its original packaging as close to the installation location as possible.
2. If suspending the outdoor unit, use a rope or belt, and use cloth or wood as padding in order to avoid damaging the unit.
3. Use the handles at left and right to transport the unit, and be careful not to touch your hands or other objects against the fin.

● Installation

1. Read the "Selecting the outdoor unit installation location" section thoroughly before installing the outdoor unit.
2. If installing the unit to a concrete base or other solid base, use M10 or W 3/8 bolts and nuts to secure the unit, and ensure that the unit is fully upright and level.
   (The anchor bolt positions are shown in the diagram at right.)
   In particular, install the unit at a distance from the neighbouring building which conforms to regulations specified by local noise emission regulation standards.
3. Do not install the outdoor unit to the building's roof.
4. If there is a possibility that vibration may be transmitted to the rooms of the building, place rubber insulation between the unit and the installation surface.
5. Drain water will be discharged from the outdoor unit when operating the system in heating or defrosting modes. Select an installation location which will allow the water to drain away properly, or provide a drainage channel so that the water can drain away.
   (If this is not done, the drain water may freeze during winter, or the water may spill down to areas underneath the installation location.)
   - If a drain pipe needs to be installed, insert the accessory drain elbow into the mounting hole at the bottom of the outdoor unit, and connect a hose with an inside diameter of 15 mm to this drain elbow. (The hose is not supplied.)

   ※If using the drain elbow, install the outdoor unit on a base which is at least 5 cm high.





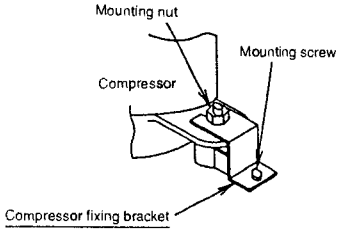
Anchor bolt positions

MODEL NAME	Amm	Bmm	Cmm	Dmm
CU-40C5✱✱✱ CU-40C0✱✱✱ CU-50C5✱✱✱ CU-50C0✱✱✱ CU-50CT0✱✱✱	500	135	340	385
CU-71C5✱✱✱ CU-71C0✱✱✱ CU-71CT0✱✱✱ CU-80C5✱✱✱ CU-80C0✱✱✱ CU-60CT0✱✱✱ CU-100C0✱✱✱ CU-160CT0✱✱✱ CU-112C5✱✱✱ CU-112C0✱✱✱ CU-112CT0✱✱✱	500	200	360	450
CU-140C5✱✱✱ CU-140C0✱✱✱ CU-140CT0✱✱✱ CU-160C5✱✱✱ CU-160C0✱✱✱ CU-160CT0✱✱✱	700	200	360	720

NOTE In cold regions (where the outdoor air temperature can drop to 0°C or below continuously for 2 - 3 days), the drain water may freeze, and this may prevent the fan from operating. Do not use the drain elbow in such cases.

CAUTION

● Be sure to remove the compressor fixing brackets. (Some models are not equipped with compressor fixing brackets.)
● To remove, first remove the mounting screws, loosen the compressor mounting nuts and then pull sideways.
● After removing, be sure to tighten the compressor mounting nuts again.



4. Connecting the pipes

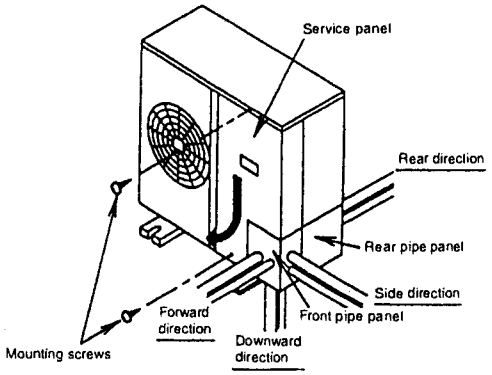
- The refrigerant pipes are of particular importance. The installation work for refrigeration cycles in separate-type air conditioners must be carried out perfectly.

1. Refer to the table below for the pipe diameters, equivalent lengths and indoor/outdoor unit difference of elevation.

Model name	Pipe diameter (mm)		Equivalent length (m)	Difference of elevation (m)	Model name	Pipe diameter (mm)		Equivalent length (m)	Difference of elevation (m)
	Liquid-side pipes	Gas-side pipes				Liquid-side pipes	Gas-side pipes		
CU-40C5✱✱✱ CU-40C0✱✱✱	φ6.35	φ12.7	30	30	CU-80C5✱✱✱ CU-80C0✱✱✱ CU-80CT0✱✱✱ CU-100C0✱✱✱ CU-100CT0✱✱✱	φ9.52	φ15.88	50	30
CU-50C5✱✱✱ CU-50C0✱✱✱ CU-50CT0✱✱✱	φ6.35	φ12.7	40	30	CU-112C5✱✱✱ CU-112C0✱✱✱ CU-112CT0✱✱✱ CU-140C5✱✱✱ CU-140C0✱✱✱ CU-140CT0✱✱✱ CU-160C5✱✱✱ CU-160C0✱✱✱ CU-160CT0✱✱✱	φ9.52	φ19.05	50	30
CU-71C5✱✱✱ CU-71C0✱✱✱ CU-71CT0✱✱✱	φ6.35	φ15.88	50	30					

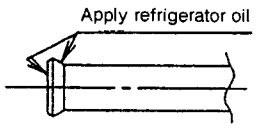
2. Local pipes can project in any of four directions.
   - Make holes in the pipe panels for the pipes to pass through.
   - Be sure to install the pipe panels to prevent rain from getting inside the outdoor unit.

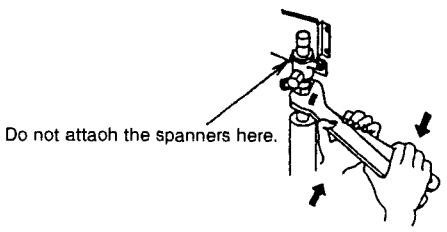
   [Removing the service panel]
   (1) Remove the two mounting screws.
   (2) Slide the service panel downward to release the pawls. After this, pull the service panel toward you to remove it.



3. Notes when connecting the refrigeration pipes
   - Use clean copper pipes with no water or dust on the insides.
   - Use phosphorus-free, unjointed copper pipes for the refrigerant pipes.
   - If it is necessary to cut the refrigerant pipes, be sure to use a pipe cutter, and use compressed nitrogen or an air blower to clean out any foreign particles from inside the pipe.
   - Be careful not to let any dust, foreign materials or water get inside the pipes during connection.
   - If bending the pipes, allow as large a bending radius as possible. Do not flex the pipes any more than necessary.
   - If joining pipe ends, do so before tightening the flare nut.
   - Always blow the pipe end with nitrogen while joining pipe ends. (This will prevent any oxide scaling from occurring inside the pipe.)
   - If using long pipe lengths with several joined pipe ends, insert strainers inside the pipes. (Strainers are not supplied.)
   - When tightening the flare nuts, coat the flares (both inside surfaces) with a small amount of refrigerator oil, and screw in about 3 - 4 turns at first by hand.
   - Refer to the following table for the tightening torques. Be sure to use two spanners to tighten. (If the nuts are over-tightened, it may cause the flares to break or leak.)

Flare nut tightening torque			N • m {kgf • cm}
φ6.35mm	18 {180}	φ15.88mm	65 {650}
φ9.52mm	42 {420}	φ19.05mm	100 {1000}
φ12.7mm	55 {550}		





4. After piping connection has been completed, make sure that terminal areas of the indoor and outdoor units are free from gas leakage by the use of nitrogen, etc.

5. Air purge within connection piping shall be carried out by evacuation.

5. Heat insulation

⚠ Caution	Use a material with good heat-resistant properties as the heat insulation for the pipes. Be sure to insulate both the gas-side and liquid-side pipes. If the pipes are not adequately insulated, condensation or water leakages may occur.

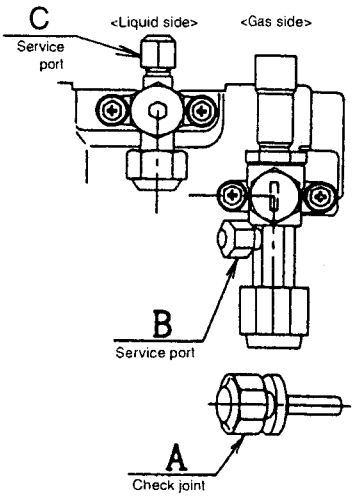
Liquid-side pipes	Material that can withstand 120°C or higher
Gas-side pipes	

6. Charging with refrigerant

◎ At the time of shipment from the factory, this unit is charged with enough refrigerant for an equivalent pipe length of 30 m or 20 m. (Refer to the following table)

Additional Charging amount For standard type

Model Name		Equivalent Piping Length		MAX Equivalent Length
		30m or less	30m or more	
CU-40C5※※※	CU-40C0※※※	Not required	———	30m
CU-50C5※※※	CU-50C0※※※	Not required	0.02kg/m	40m
CU-71C5※※※	CU-71C0※※※	Not required	0.02kg/m	50m
CU-80C5※※※ CU-112C5※※※ CU-140C5※※※ CU-160C5※※※	CU-80C0※※※ CU-100C0※※※ CU-112C0※※※ CU-140C0※※※ CU-160C0※※※	Not required	0.05kg/m	50m



Additional Charging amount For CT0※ type

Model Name	Equivalent Piping Length		MAX Equivalent Length
	20m or less	20m or more	
CU-50CT0※※※	Not required	0.02kg/m	40m
CU-71CT0※※※	Not required	0.02kg/m	50m
CU-80CT0※※※ CU-100CT0※※※ CU-112CT0※※※ CU-140CT0※※※ CU-160CT0※※※	Not required	0.05kg/m	50m

Checking the pressure

Check the pressure at the service port on the valve and the check joint where the pipe ends have been joined according to the table at right.

Heat pump model

	A	B
During cooling operation	High pressure	Low pressure
During heating operation	Low pressure	High pressure

Cooling only model

	C	B
During cooling operation	High pressure	Low pressure

7. Electrical wiring

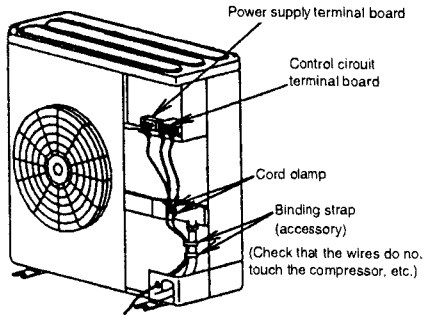
⚠ WARNING	All electrical work must be carried out only by a qualified technician according to proper technical standards for electrical work and according to instructions given in the installation manual, and only the proper specified circuits must be used. If circuits with insufficient capacity are used, or if electrical work is not carried out properly, electric shocks or fire may result.

⚠ Caution	Be sure to install a leakage current breaker or circuit breaker to the main power supply, otherwise electric shocks may result.

⚠ Caution	Be sure to connect the unit to a secure earth connection. Use the special earthing screw to connect the unit to earth (with a earth resistance of 100 Ω or less) with a earthing wire as specified in the table below. If the earthing work is not carried out properly, electric shocks may result.

◎ Connect the power supply wiring and indoor/outdoor unit connection wiring according to the electrical circuit diagram instructions.
◎ Clamp the wires securely to the terminal connections using cord clamps so that no undue force is placed on the wires.
◎ Once all wiring work has been completed, tie the wires and cords together with the binding strap so that they do not touch other parts such as the compressor and pipes.

1. Connect the power supply line to a 3-phase/380-415V, or 220V(or single-phase 220 - 240 V) power supply.
   If the phase is reversed, the self-diagnosis function will be activated and the unit will not operate. In such cases, switch over any two of the power supply wires(L1(R), L2(S), L3(T)) (3-phase models only)
   (Never operate the unit by pressing the electromagnetic switch.)
2. The binding screws inside the power supply box may become loosened due to vibration during transportation, so check that they are tightened securely.
3. Tighten the binding screws to the specified torque while referring to the table below.
4. If connecting two separate wires to a single crimped terminal, place the two crimped terminal wires together as shown in Fig. A.
   (If the arrangement shown in Fig. B is used, poor contacts or contact damage may result.)
5. If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off again until at least 1 minute has passed (except when a reversed phase has been detected).


Power supply terminal board
Control circuit terminal board
Cord clamp
Binding strap (accessory)
(Check that the wires do no. touch the compressor, etc.)

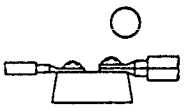


Fig. A (OK)

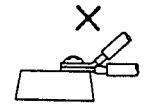


Fig. B (Not OK)

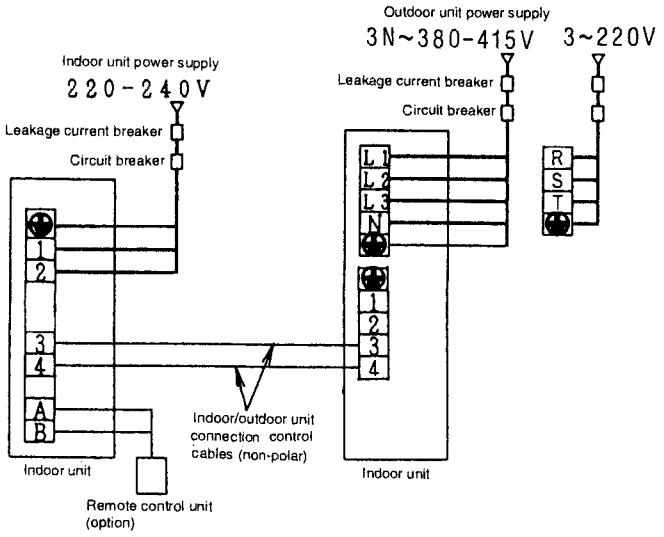
⚠ WARNING	Use only the specified cables for wiring connections. Connect the cables securely, and secure them properly so that no undue force will be applied to the terminal connections. If the terminals are loose or if the wires are not connected securely, fire may result.

Nominal screw radius	Tightening torque N•cm {kgf•cm}
M 3	68~98 {7~10}
M 4	157~196 {16~20}
M 5	196~245 {20~25}

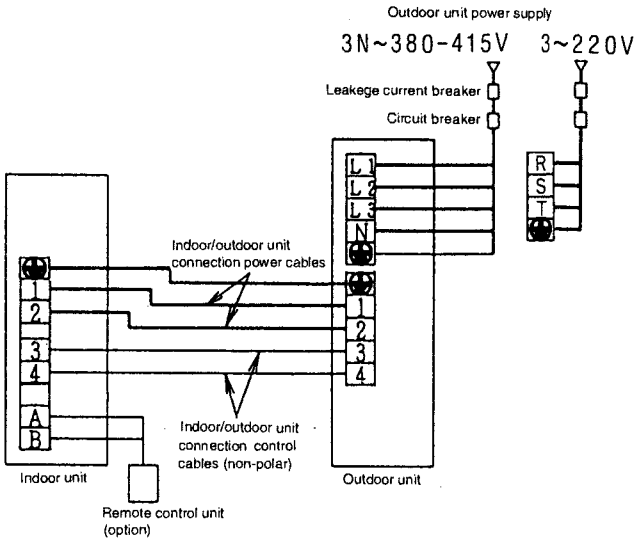
Refer to the following diagrams for details on how to connect the power supply cables and indoor/outdoor unit connection cables.

Outdoor unit/3-phase model

(When both indoor and outdoor unit draw power)

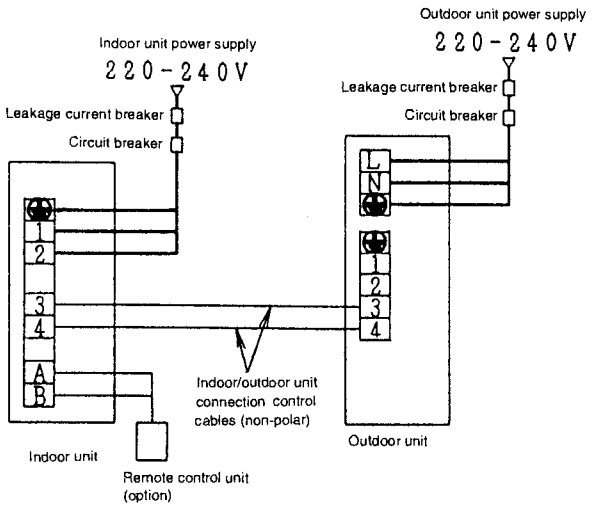


(When only the outdoor unit draws power)

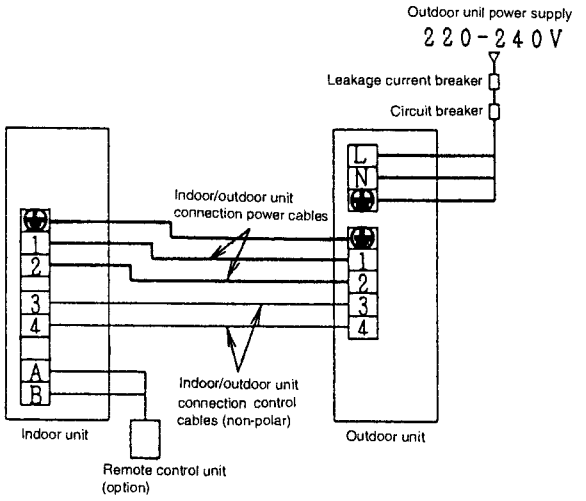


Outdoor unit/single-phase model

(When both indoor and outdoor unit draw power)



(When only the outdoor unit draws power)



◎ Power supply specifications

Model			Leakage breaker (A)	Circuit breaker		Minimum power source cable size ※1		Earthing cable size	Indoor/outdoor unit connection power cables terminals (1)-(2)	Indoor/outdoor unit connection power cables terminals (3)-(4)
				Switch(A)	Fuse(A)	(mm)	(mm^2)			
40C(1.5HP)	Single phase	220~240V	30	30	20	2.0	3.5	2.0mm^2 (φ1.6mm) or more	2.0mm^2 (φ1.6mm) or more	0.5~2.0 mm^2×2
50C(2HP)	Single phase	220~240V	30	30	30	2.6	5.5			
71C(2.5HP)	Single phase	220~240V	40	60	40	2.6	5.5			
	Three phase	220V	20	30	20	2.0	3.5			
		380~415V	15	15	15	1.6	2.0			
80C(3HP)	Single phase	220~240V	40	60	40	2.6	5.5			
	Three phase	220V	30	30	30	2.6	5.5			
		380~415V	20	30	20	2.0	3.5			
100C(3.5HP)	Single phase	220~240V	40	60	60	3.2	8.0			
	Three phase	220V	40	60	40	2.6	5.5			
		380~415V	30	30	20	2.0	3.5			
112C(4HP)	Three phase	220V	40	60	40	2.6	5.5			
		380~415V	30	30	20	2.0	3.5			
140C(5HP)	Three phase	220V	50	60	50	3.2	8.0	3.5mm^2 (φ2.0mm) or more		
		380~410V	30	30	30	2.6	5.5			
160C(6HP)	Three phase	220V	60	60	60	3.2	8.0			
		380~415V	40	40	40	2.6	5.5			

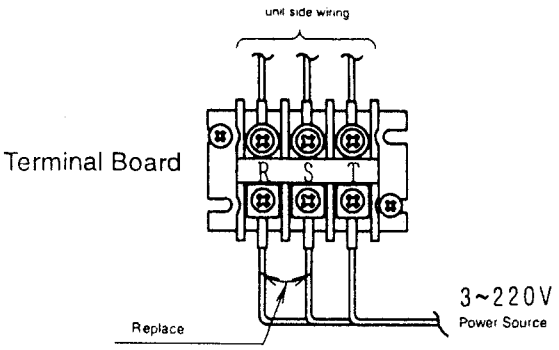
※1 Cable size is based on overall length 20m.

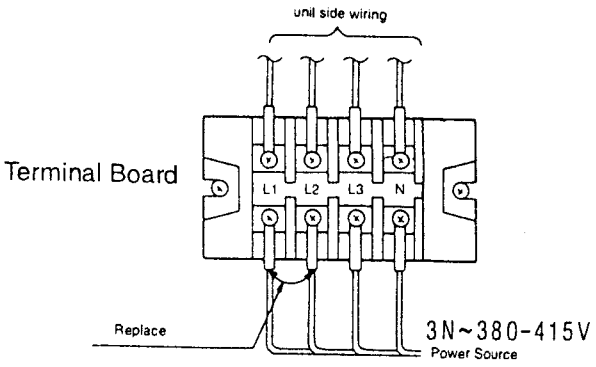
Note

1. Where ground work (earth) is carried out, do not connect the ground return to the gas pipe, water line pipe, grounded circuit of the telephone and lightening rod, or ground circuit of other product in which earth leakage breaker is incorporated. (Such action is prohibited by statute, etc.)
2. In order to prevent malfunction (noise generation) of the equipment, carry out the wiring of the control cable for indoor and outdoor units (signal cable) isolating it from other power cable with separate cable.
3. Select the particular size of electrical wire for power supply wiring in accordance with the standards of the given nation and region.

Connecting power supply cables

- If reversed phase is detected and the self-diagnosis function is activated after connecting the power supply cables, carry out the following operation.
  Switch over any two of the power supply wires which are connected to the power supply terminal board.
  Turn off the main power supply before correcting the phase.





Caution

- Never operate the unit by pressing the electromagnetic switch.
- Never correct the phase by switching over any of the wires inside the unit.

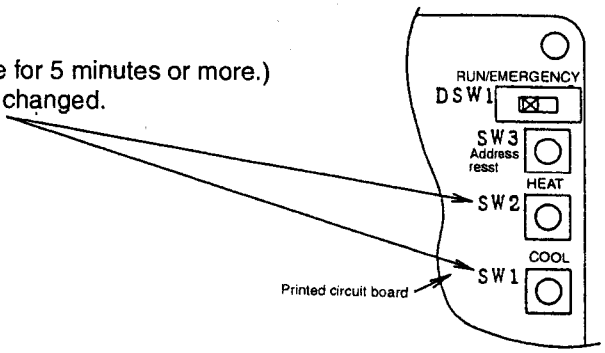
8. Precautions with regard to test operation

Caution

- Always be sure to use a properly-insulated tool to operate the switch on the circuit board. (Do not use your finger or a metallic object.)
- Never turn on the power supply until all installation work has been completed.
- Open the circuit breaker before test operation extends past 6 hours. (The crankcase heater will then be energized.)
- For three-phase models, check that the phase is not reversed.
  (If the phase is reversed, the LED on the printed circuit board will flash.)
- Check that the voltage is 198 V or higher when starting the unit. (The unit will not operate if the voltage is less than 198 V.)
- Test operation can be carried out using the remote control unit or by using the switch on the printed circuit board inside the outdoor unit.
  If carrying out test operation at the printed circuit board of the outdoor unit, follow the procedure given below.
  (If using the remote control unit to carry out test operation, refer to the installation manual which is supplied with the indoor unit.)
- Press the COOL or HEAT switch for 1 second or more.
  The LEDs will operate as follows during test operation.
  (be sure to select cooling mode first, and run the units in this mode for 5 minutes or more.)

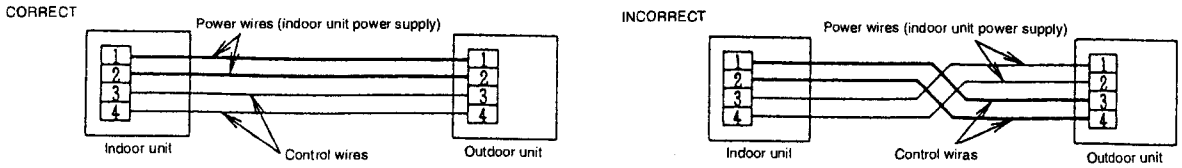
※ The compressor will stop momentarily when the operation mode is changed.

Test operation mode	LEDs on printed circuit board
Cooling test mode	LEDs 2 - 4 flash, LEDs 5 - 8 switch off
Heating test mode	LEDs 2 - 5 switch off, LEDs 6 - 8 flash



- Press the TEST button once more to cancel test operation mode.

NOTE 1 These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have operated. In such cases, check that the drive wires (connected to terminals [1] and [2]) and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.



NOTE 2 Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.)
Once the cause of the short is eliminated, normal operation will then be possible.

NOTE 3 When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. If heating mode is selected first, it may cause problems with operation of the compressor.

NOTE 4 Test operation should be carried out for a minimum of 5 minutes. (Test operation will be cancelled automatically after 30 minutes.)

NOTE 5 Test operation mode should always be cancelled once test operation itself has been completed.

NOTE 6 If the self-diagnosis function reports a problem but more than one problem has developed at the indoor and/or outdoor units, the problem display on the remote control unit may not match the LED display on the outdoor unit printed circuit boart. In such cases, check both locations and remove the causes of the problems.

Emergency operation

Emergency operation can be carried out by setting the DSW1 switch on the printed circuit board inside the outdoor unit to the EMERGENCY position.
During emergency operation, any abnormalities detected by the temperature thermistors are ignored while the outdoor unit is operating, so that long-term operation in this mode should be avoided. After emergency mode operation has been completed and normal operation is to be resumed, turn the power supplies for the indoor and outdoor units off and then back on again.

- Set the abnormal temperature thermistor only to the setting in the table below when carrying out emergency operation.

	Thermistor	Cooling operation	Heating operation
Indoor unit side	Room temperature detection	Fixed at 25℃	
	Pipe temperature detection	Shorted	Open

	Thermistor	Cooling operation	Heating operation
Outdoor unit side	Discharge thermistor detection	Open	Open
	Heat exchanger outlet temperature detection	Shorted	Open

※ Refer to the electrical circuit diagrams for details on wiring for each thermistor.

Self-diagnosis function

- The display screen on the wired remote control unit and the self-diagnosis LEDs (red) on the outdoor unit printed circuit board in the outdoor unit can be used to indicate where the location of a preblem is. Refer to the table below to remove the cause of the problem, and then re-start the air conditioner system. ○·····flashing, Blank·····off

- The LED1 (green) illuminates to indicate that the microprocessor on the microprocessor circuit board is operating normally.
  If the LED is switched off or is flashing irregularly, check the power supply, and turn it off and then back on again.

Wired remote control unit display		Outdoor unit printed circuit board LED							Location of problem	Check location
Abnormal display	Detail display	LED2	LED3	LED4	LED5	LED6	LED7	LED8		
F15	-01	○				○			Drain level float switch problem	Drain pump and drain pipe, indoor unit connectors CN6 & CN10, or relay connector
F16	-01		○			○			Louver switch problem	Louver motor, decorative panel connection terminal, or indoor unit connectors CN1 & CN6
F17	-01	○	○			○			Option problem	Option connection terminals
F20	-01	○			○				Indoor temperature thermistor problem	Indoor temperature thermistor lead wire or indoor unit connector CN1
	-02	○		○	○				Remote control thermistor problem	Remote control thermistor
F21	-01		○		○				Pipe temperature thermistor problem (indoor unit side)	Pipe temperature thermistor lead wire or indoor unit connector CN1
F25	-01			○					Centralised control address overlap problem	Check settings for optional centralised control circuit board address switch
F26	-01		○						Remote control transmission wire open circuit problem	Remote control unit cable and connection terminals
	-02	○							Remote control transmission problem	Check the transmission wave pattern
F27	-01		○				○		Indoor/outdoor unit transmission wire open circuit problem	Indoor/outdoor unit connection cable and connection terminals, or indoor unit and outdoor unit power supplies
	-02	○					○		Indoor/outdoor unit transmission problem	Check the transmission wave pattern.
F29	-01		○		○	○			Indoor unit setting problem	Contact the place of purchase.
	-02	○			○	○			Indoor unit setting problem	Contact the place of purchase.
	-12	○		○	○	○			Remote control unit setting problem	Contact the place of purchase.
F30	-02	○		○		○	○		Open phase, or reversed phase of power supply	Check the main power supply terminal board connections, or switch over any two of the power supply wires.
	-06		○	○		○	○		Poor power supply connection, or distorted voltage wave pattern	Check the main power supply terminal board connections, and check the power supply wave pattern.
	-07	○	○	○		○	○		Poor power supply connection	Check the main power supply terminal board connections.
F31	-01			○		○	○		Intake pressure protection	Insufficient gas
	-02		○			○	○		High-pressure cut-off	Refrigeration system
F33	-01	○				○	○		Compressor overcurrent protection	Open phase or lock in compressor, or blown main power supply fuse
	-02	○	○			○	○		Compressor discharge temperature protection	Insufficient gas
F40	-41	○			○		○		Compressor discharge temperature thermistor problem	Discharge temperature thermistor lead wire, outdoor unit connector CN2, or relay connector
	-61		○		○		○		Heat exchanger outlet temperature thermistor problem	Heat exchanger outlet temperature thermistor lead wire, outdoor unit connector CN2, or relay connector
F41	-02	○		○	○		○		High-prossure switch open circuit problem	High-pressure switch lead wire, outdoor unit connector CN2, or relay connector
	-03		○	○	○		○		Heating pressure switch open circuit problem	Heating prossure switch lead wire, outdoor unit connector CN2, or relay connector
	-12	○	○	○	○		○		Low-pressure switch open circuit problem	Low-pressure switch lead wire, outdoor unit connector CN2, or relay connector
F42	-01	○	○		○		○		Current detector open circuit or compressor current problem	Outdoor unit connector CN2, compressor internal protection system activated, or blown main power supply fuse
F49	-01		○		○	○	○		Outdoor unit setting problem	Contact the place of purchase.
	-02	○			○	○	○		Outdoor unit setting problem	Contact the place of purchase.

- If the problem disappears and operation returns to normal, the CHECK display on the remote control unit will switch off, but the self-diagnosis LED will remain illuminated until operation is resumed.

- If the outdoor unit is being run in emergency operation mode or test operation mode, the outdoor unit LEDs will flash, but this does not indicate the presence of an abnormality.

Outdoor unit printed circuit board LED							
LED2	LED3	LED4	LED5	LED8	LED7	LED8	
		○	○	○			Display during emergenoy operation
○	○	○					From outdoor unit during cooling test operation
				○	○	○	From outdoor unit during heating test operation

9. As to making the inspection after completion of work fully understood

- At the time when the work has been completed, measure and record the characteristics of test run without fail and keep the measuring data, etc.
- Carry out the measurement regarding room temperature, outside air temperature, suction and air discharge temperatures, wind velocity, wind volume, voltage, current, presence of abnormal vibration, operating pressure, piping temperature, compressive pressure, airtight pressure as items to be measured.
- As to the structure and appearance, check following items.

☐ Short circuit of the blowout air.
☐ Smooth flow of the drain
☐ Reliable thermal insulation
☐ Leakage of refrigerant
☐ Mistake in wiring
☐ Reliable connection of the grand wire
☐ Looseness in terminal screw, fastening torque
M4...157~196N · cm {16~20kgf · cm}
M5...196~245 · cm {20~25kgf · cm}

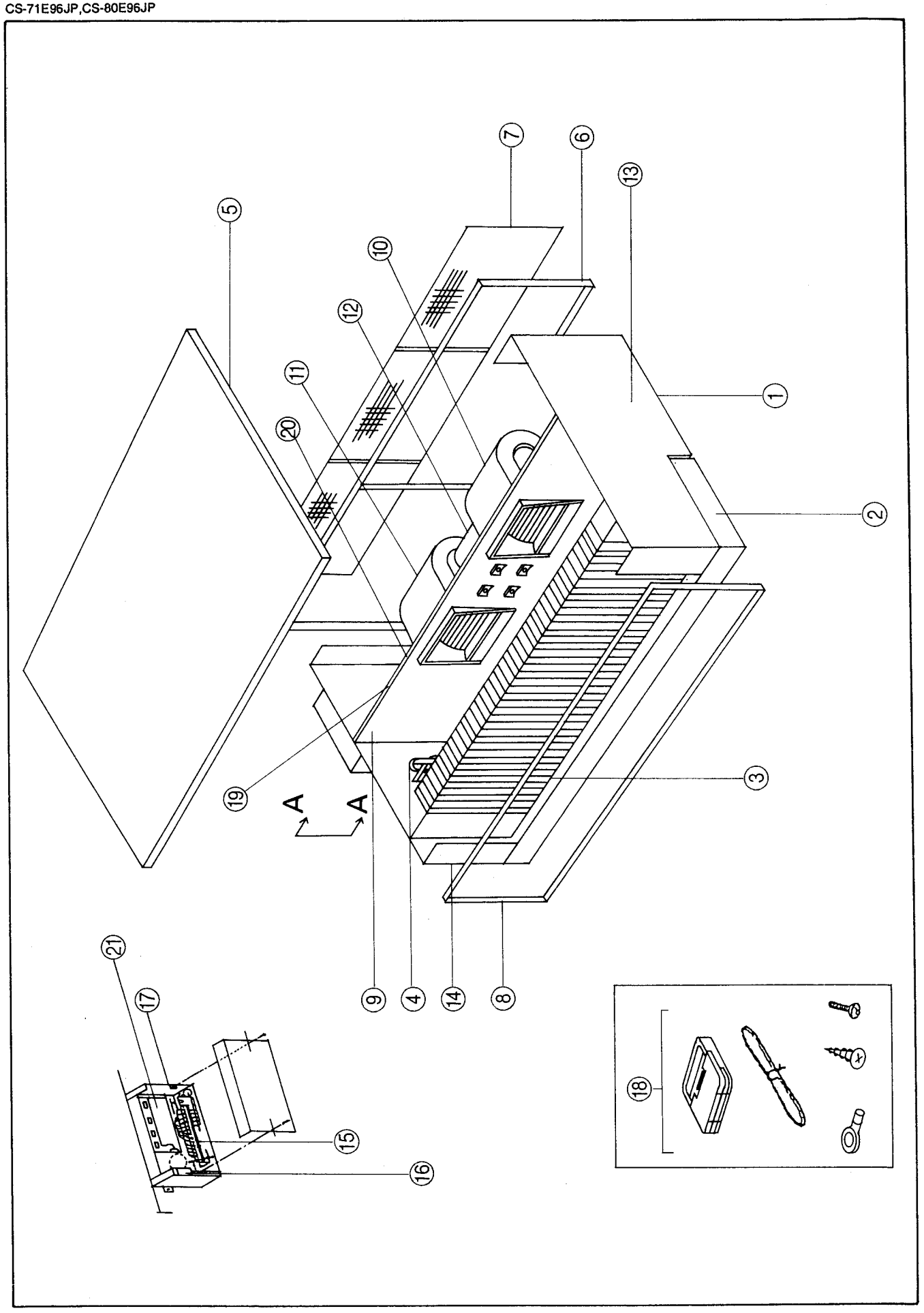
10. As to delivery to the customer

- Request the customer to operate this air conditioner viewing instruction manual come with indoor unit in practice and explain how to operate.
- Deliver the instruction manual to the customer without fail.

As to parts to be sold separately

We are preparing air guider for outdoor unit and parts to be sold separately for indoor unit, etc., however, as to details of mounting method, etc., observe respective instruction manual.

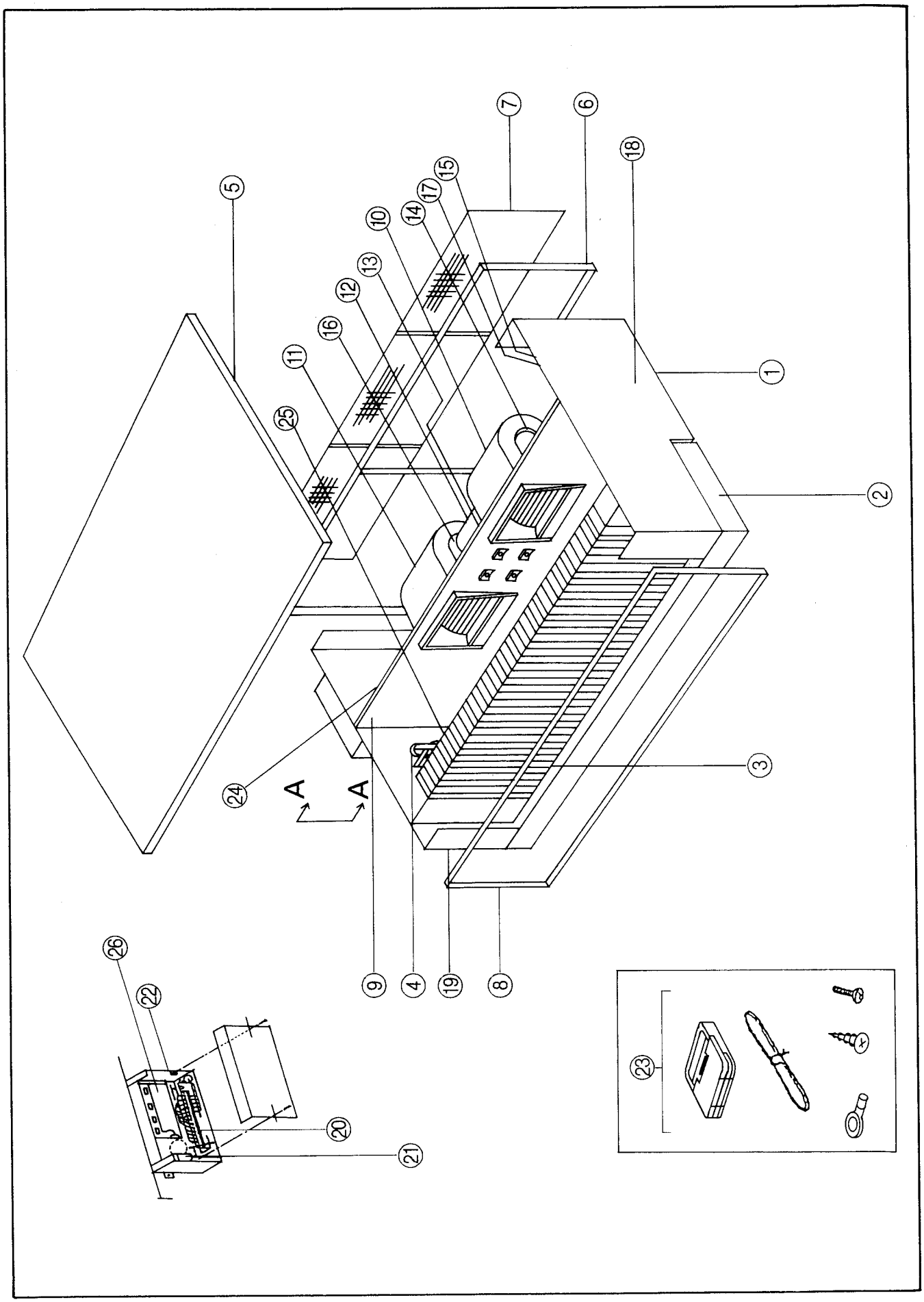
CS-71E96JP,CS-80E96JP



CS-71E96JP, CS-80E96JP

REF. NO	PARTS NAME	PARTS NUMBER	QUANTITY PER 1 UNIT	
			CS-71E96JP	CS-80E96JP
1	Cabinet(Bottom)	P02-T05840	1	1
2	Drain pan	P42-T02760	1	1
3	Evaporator	P45-T05100	1	1
4	Distributor as.	P45-T04670	1	—
		P45-T04510	—	1
5	Cabinet(Top)	P42-T02730	1	1
6	Filter guide as.	P42-T02790	1	1
7	Duct flange as.(Outlet)	P42-T02770	1	1
8	Filter	P03-T01370	1	1
9	Fan base as.	P45-T05080	1	1
10	Casing R as.	P45-T04500	1	1
11	Casing L as.	P45-T04570	1	1
12	Fan motor	P06-T03490	1	—
		P06-T03480	—	1
13	Panel side R as.	P42-T02750	1	1
14	Panel side L as.	P42-T02740	1	1
15	Terminal board	P06-T03350	1	1
16	Capacitor	P06-T03510	1	—
		P06-T03500	—	1
17	Transformer	06-856320	1	1
18	Remoto controller(P)	06-856300	1	1
19	Thermistor as.	46-854510	1	1
20	Coil sensor	06-853760	1	1
21	Printed circuit board	46-938070	1	1

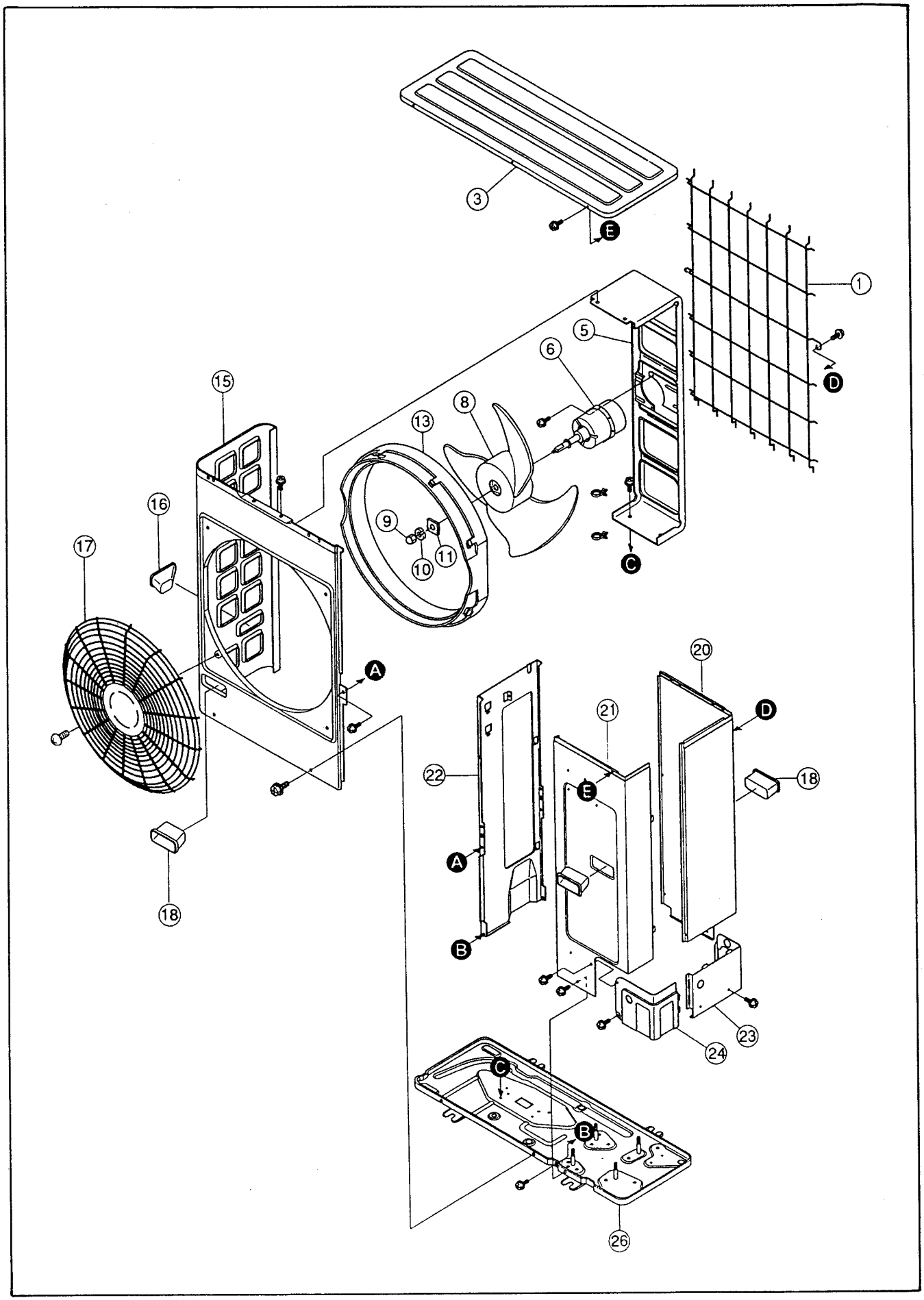
CS-112E96JP,CS-140E96JP,CS-160E96JP



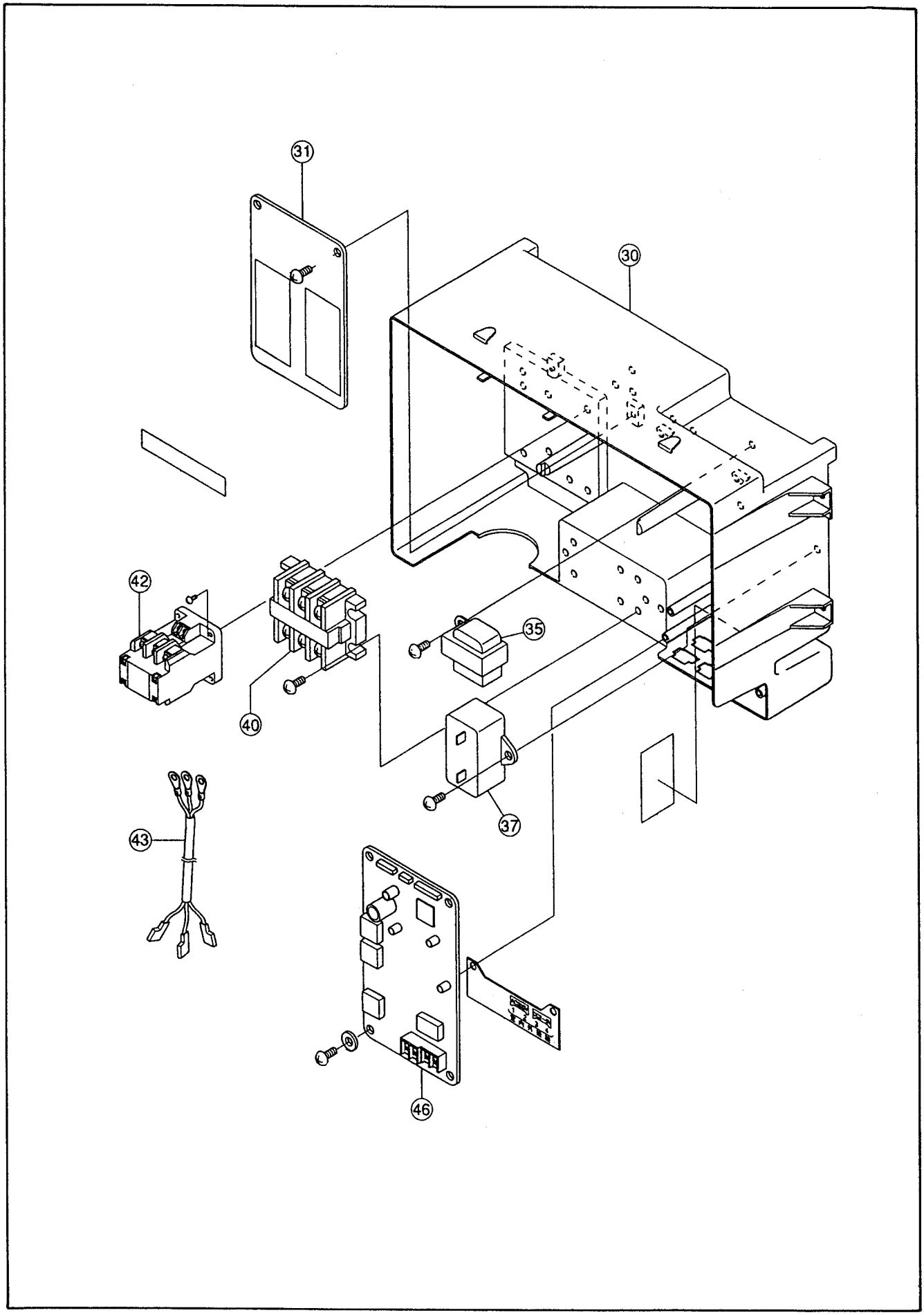
CS-112E96JP, CS-114E96JP, CS-160E96JP

REF. NO	PARTS NAME	PARTS NUMBER	QUANTITY PER 1 UNIT		
			CS-112E96JP	CS-140E96JP	CS-160E96JP
1	Cabinet(Bottom)	P02-T06560	1	1	1
2	Drain pan	P42-T02860	1	1	1
3	Evaporator	P45-T05340	1	—	—
		P45-T05350	—	—	1
		P45-T05380	—	1	—
4	Distributor as.	P45-T05300	1	—	—
		P45-T05310	—	1	—
		P45-T05390	—	—	1
5	Cabinet(Top)	P42-T02830	1	1	1
6	Filter guide as.	P42-T02840	1	1	1
7	Duct flange as.(Outlet)	P42-T02850	1	1	1
8	Filter	P03-T01380	1	1	1
9	Fan base as.	P45-T05320	1	—	—
		P45-T05330	—	1	1
10	Casing R as.	P45-T05480	2	2	2
11	Casing L as.	P45-T05470	1	2	2
12	Fan motor	P06-T03520	1	—	—
		P06-T03530	—	1	1
13	Stay fan motor	P06-T03780	1	1	1
14	Shaft	P05-T11100	1	—	—
		P05-T11110	—	2	2
15	Bearing supporter	P05-T11120	1	2	2
16	Coupling	05-398724	1	2	2
17	Bearing	05-857010	1	2	2
18	Panel side R as.	P42-T02750	1	1	1
19	Panel side L as.	P42-T02870	1	1	1
20	Terminal board	P06-T03350	1	1	1
21	Capacitor	P06-T03550	1	1	—
		P06-T03830	—	—	1
22	Transformer	06-856320	1	1	1
23	Remote controller(P)	06-856300	1	1	1
24	Thermistor as.	46-854510	1	1	1
25	Coil sensor	06-853760	1	1	1
26	Printed circuit board	46-938070	1	1	1

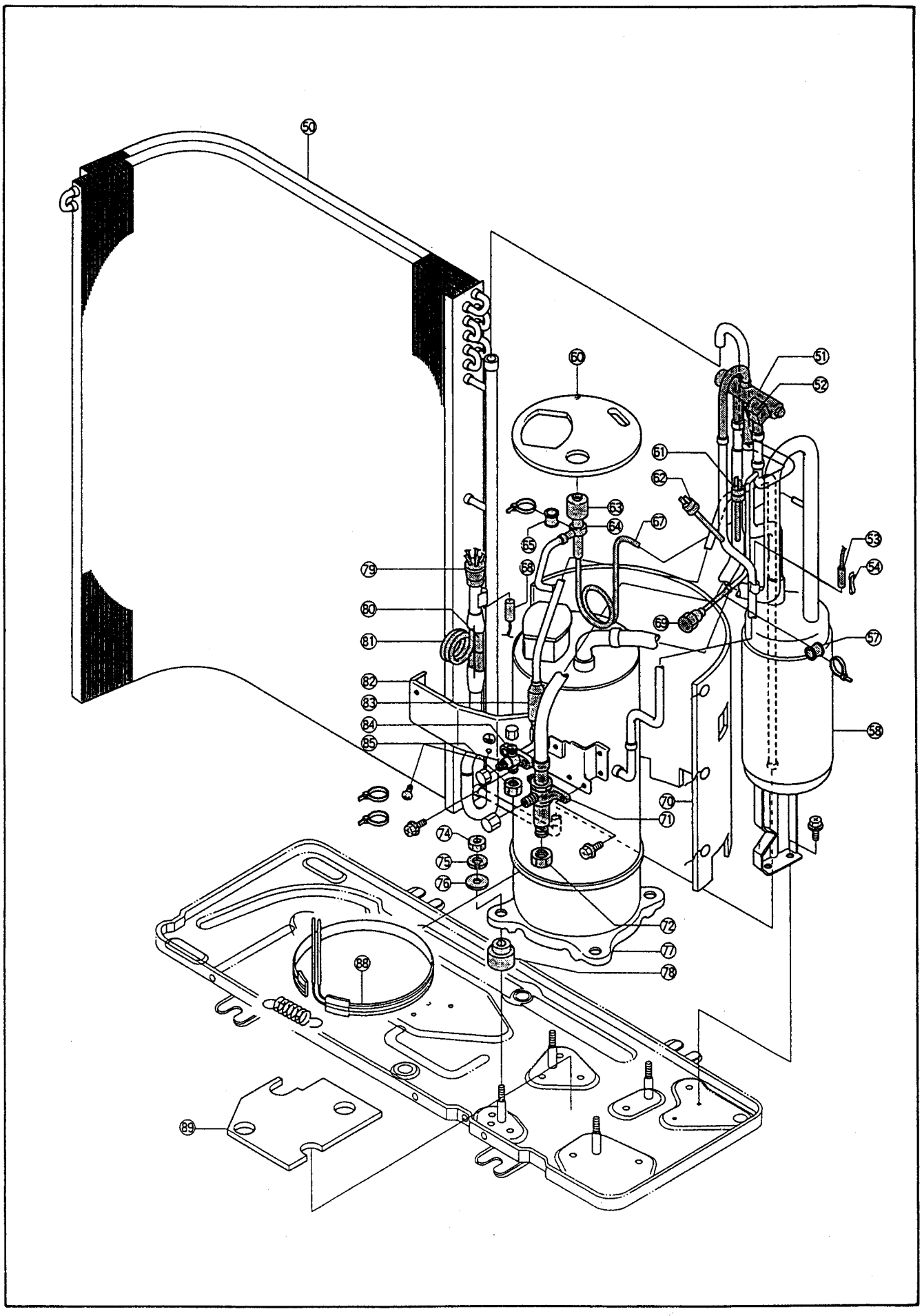
CU-71C52HP, CU-71C52XP, CU-80C52HP, CU-80C52XP



CU-71C52HP, CU-71C52XP, CU-80C52HP, CU-80C52XP



CU-71C52HP, CU-71C52XP, CU-80C52HP, CU-80C52XP (Heat pump model)



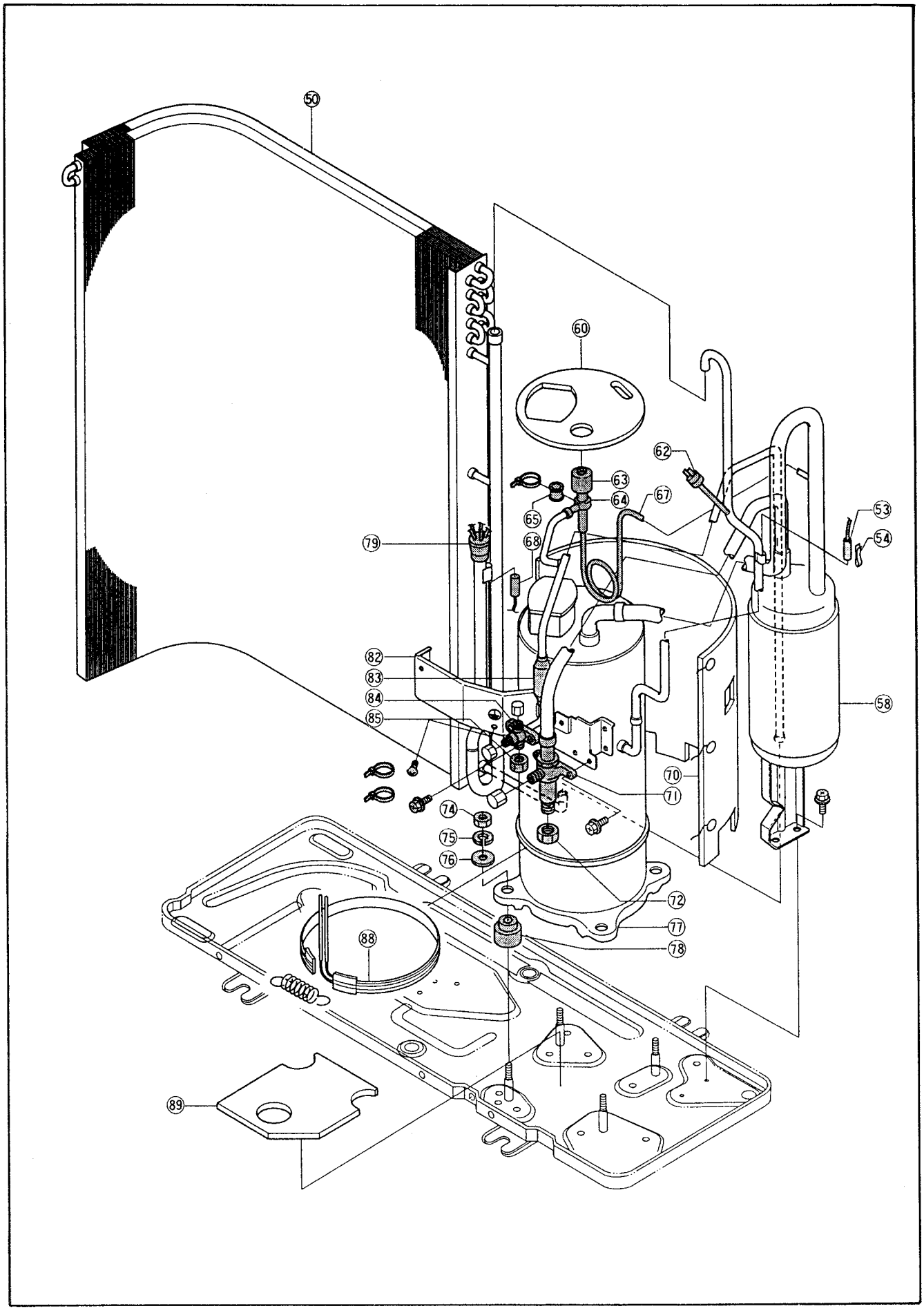
Heat pump model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT				※REC PARTS
			71C52HP	71C52XP	80C52HP	30C52XP	
1	Condenser guard	02-679330	1	1	1	1	
3	Top plate As	02-879340	1	1	1	1	
5	Motor stay	02-879300	1	1	1	1	
6	Fan motor	06-855820	1	1	1	1	※
8	Prop fan	05-864390	1	1	1	1	
9	10 Nut	08-405150	1	1	1	1	
10	10 Sp washer	08-405160	1	1	1	1	
11	Washer for fan	05-962730	1	1	1	1	
13	Orifice ring	02-879410	1	1	1	1	
15	Orifice plate	02-879320	1	1	1	1	
16	Hanger shell(B)	02-879430	1	1	1	1	
17	Fan guard	42-574190	1	1	1	1	
18	Hanger shell(A)	02-879420	3	3	3	3	
20	Side panel	02-879350	1	1	1	1	
21	Front panel	02-879380	1	1	1	1	
22	Seal plate	02-879310	1	1	1	1	
23	Pipe cover B	02-879370	1	1	1	1	
24	Pipe cover F	02-879360	1	1	1	1	
26	Unit base As	42-573150	1	1	1	1	
30	Control box	06-852690	1	1	1	1	
31	CT board	06-855400	-	1	-	1	※
		06-854280	1	-	1	-	
35	Transformer	06-855430	1	1	1	1	※
37	Electric capacity for fan motor	06-833100	1	1	1	1	※
37	Electric capaoity for compressor	06-855440	1	-	-	-	※
		06-855450	-	-	1	-	※
40	Terminal(3P)	06-803020	1	-	1	-	
40	Terminal	06-855360	-	1	-	1	
42	Compressor relay	06-544690	1	-	1	-	※
		06-645730	-	1	-	1	※
43	Compressor cord As	46-936440	1	-	1	-	
		46-931300	-	1	-	1	
46	Printed oircuit board	46-935860	1	-	-	-	※
		46-935870	-	1	-	-	※
		46-935880	-	-	1	-	※
		46-935890	-	-	-	1	※
50	Condenser&Distributer	45-905630	1	1	-	-	
		45-905640	-	-	1	1	
51	Reversing valve	05-401290	1	1	1	1	※
52	Reversing valve coil	06-855890	1	1	1	1	※
53	Piping thermistor(Discharge)	46-930790	1	1	1	1	※
54	Spring for sensor	05-640710	2	2	2	2	
57	Pipe cramp rubber(5/8)	05-867200	1	1	1	1	
58	Accumulator As	45-905670	1	1	-	-	
		45-905950	-	-	1	1	
60	Compressor cover top	05-867370	1	1	1	1	
61	Pressure switch(Heating)	06-825230	1	1	1	1	※
62	High pressure switch	06-830840	1	1	1	1	※
83	Electric magnetic valve coil	06-855910	1	1	1	1	※
54	Electric magnetic valve	05-809320	1	1	1	1	※
65	Pipe cramp rubber	05-493370	1	1	-	-	
		05-867130	1	1	-	-	
		05-867140	-	-	1	1	

Neat pump model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT				※REC PARTS
			71C52HP	71C52XP	80C52HP	80C52XP	
67	Capillary tube for valve	05-864480	1	1	-	-	
		05-864490	-	-	1	1	
68	Piping thermistor(Coil)	46-930800	1	1	1	1	※
69	Check joint	05-822330	1	1	1	1	
70	Compressor cover	05-867350	1	1	1	1	
71	Ball valve(5/8)	05-820630	1	1	1	1	
72	Flare nut(5/8)	38-890100	1	1	1	1	
74	8 Nut	38-817010	3	3	3	3	
75	8SP Washer	38-427080	3	3	3	3	
76	8 Washer	38-490740	3	3	3	3	
77	Compressor	05-983920	1	-	-	-	※
		05-983790	-	1	-	-	※
		05-602470	-	-	1	-	※
		05-978160	-	-	-	1	※
78	Mount rubber	05-867570	4	4	4	4	
79	Distributor	05-864120	1	1	1	1	
79	Capillary tube	05-463000	5	5	5	5	
60	Check valve	05-478500	1	1	1	1	
81	Heating capillary tube	05-864180	1	1	-	-	
		05-864190	-	-	1	1	
82	Valve stay	02-801200	1	1	1	1	
83	Strainer	05-984840	1	1	-	-	
		05-815080	-	-	1	1	
84	Service valve (2/8)	05-864470	1	1	-	-	
	Service valve (3/8)	05-864350	-	-	1	1	
85	Flare nut(2/8)	38-890070	1	1	-	-	
	Flare nut(3/8)	38-890060	-	-	1	1	
88	Crankcase heater	06-855410	1	1	1	1	※
89	Base compressor cover	02-880780	1	1	1	1	
90	Drain elbo As	47-598250	1	1	1	1	

CU-71C02HP, CU-71C02XP, CU-80C02HP, CU-80C02XP (Cooling only model)



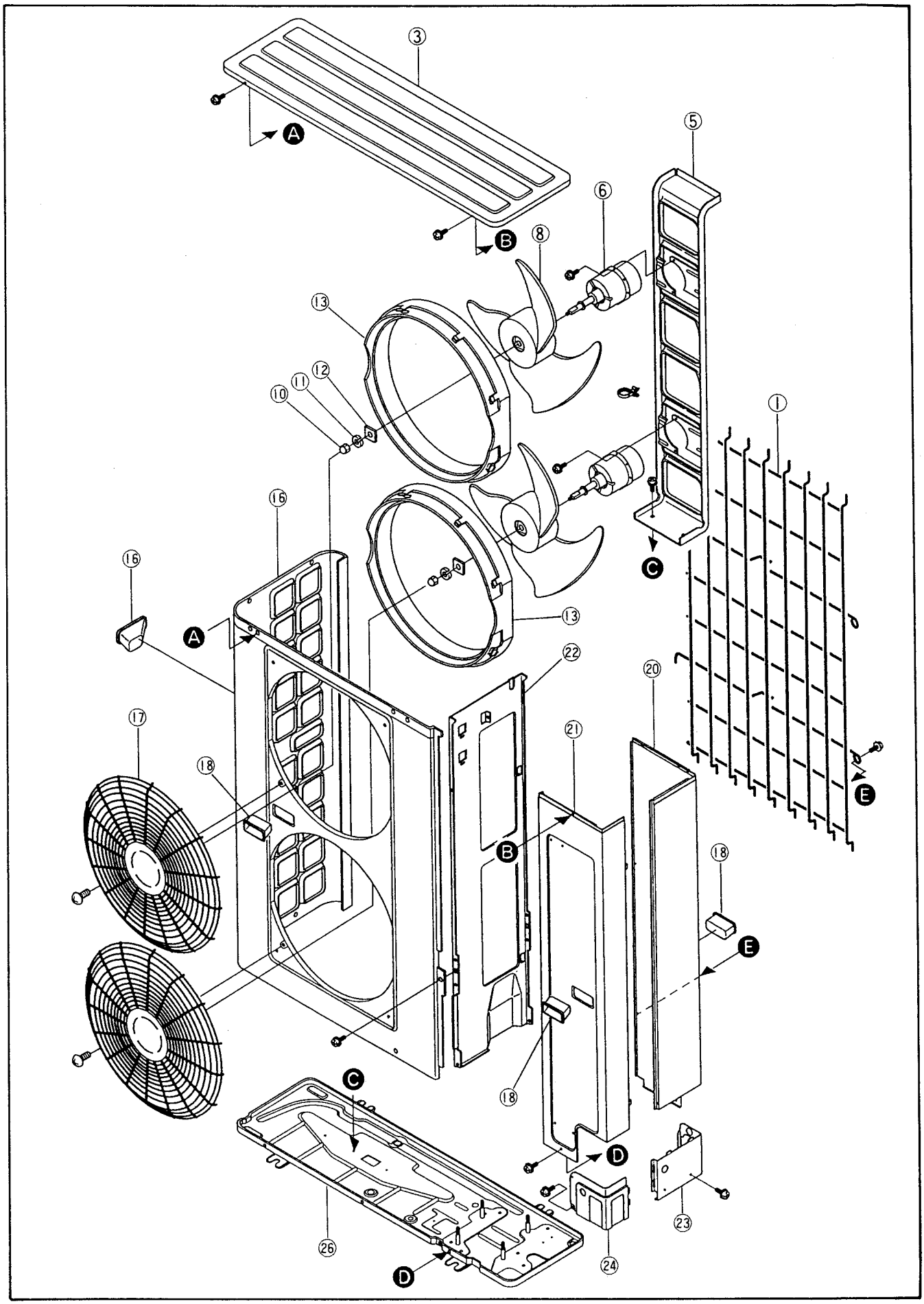
Cooling only model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT				※REC PARTS
			71C02HP	71C02XP	30C02HP	30C02XP	
1	Condenser guard	02-879330	1	1	1	1	
3	Top plate As	02-879340	1	1	1	1	
5	Motor stay	02-879300	1	1	1	1	
6	Fan motor	06-855620	1	1	1	1	※
8	Prop fan	05-864390	1	1	1	1	
9	10 Nut	08-405150	1	1	1	1	
10	10 Sp washer	06-405160	1	1	1	1	
11	Washer for fan	05-902730	1	1	1	1	
13	Orifico ring	02-879410	1	1	1	1	
15	Orifico plate	02-879320	1	1	1	1	
16	Hanger shell(B)	02-879430	1	1	1	1	
17	Fan guard	42-574190	1	1	1	1	
18	Hanger shell(A)	02-879420	3	3	3	3	
20	Side panel	02-879350	1	1	1	1	
21	Front panel	02-879380	1	1	1	1	
22	Seal plate	02-879310	1	1	1	1	
23	Pipe cover B	02-879370	1	1	1	1	
24	Pipe cover F	02-879360	1	1	1	1	
26	Unit base As	42-573150	1	1	1	1	
30	Control box	06-652690	1	1	1	1	
31	CT board	06-855400	-	1	-	1	※
		06-854280	1	-	1	-	
35	Transformer	06-855430	1	1	1	1	※
37	Electric capacity for fan motor	06-833100	1	1	1	1	※
37	Electric capacity for compressor	06-855440	1	-	-	-	※
		06-855450	-	-	1	-	※
40	Terminal(3P)	06-803020	1	-	1	-	
40	Terminal	06-855360	-	1	-	1	
42	Compressor relay	06-644690	1	-	1	-	※
		06-845730	-	1	-	1	※
43	Compressor cord As	46-936440	1	-	1	-	
		46-931300	-	1	-	1	
46	Printed circuit board	46-937120	1	-	-	-	※
		46-937130	-	1	-	-	※
		46-937140	-	-	1	-	※
		46-937150	-	-	-	1	※
50	Condenser&Distributer	45-905730	1	1	-	-	
		45-905740	-	-	1	1	
53	Piping thermistor(Discharge)	46-930790	1	1	1	1	※
54	Spring for sensor	05-840710	2	2	2	2	
57	Pipe cramp rubber(5/8)	05-867200	1	1	1	1	
58	Accumulator As	45-905670	1	1	-	-	
		45-905950	-	-	1	1	
60	Compressor cover top	05-867370	1	1	1	1	
62	High pressure switch	06-830840	1	1	1	1	※
63	Electric magnetic valve coil	06-855910	1	1	1	1	※
84	Electric magnetic valve	05-809320	1	1	1	1	※
65	Pipe cramp rubber	05-493370	1	1	-	-	
		05-867130	1	1	-	-	
		05-867140	-	-	1	1	

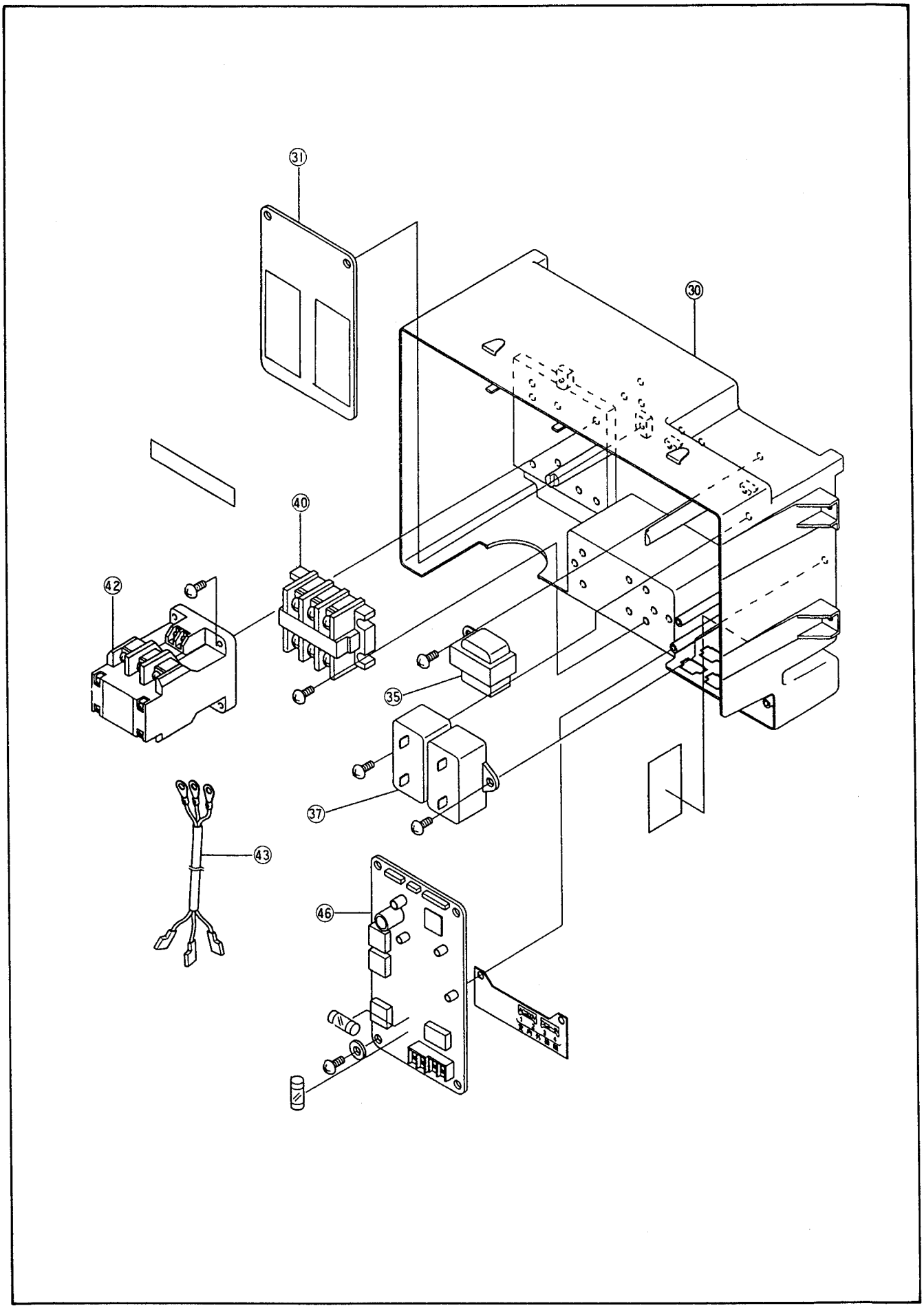
Cooling only model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT				※REC PARTS
			71C02HP	71C02XP	80C02HP	80C02XP	
67	Capillary tube for valve	05-864480	1	1	-	-	
		05-864490	-	-	1	1	
68	Piping thermistor(Coil)	48-930800	1	1	1	1	※
70	Compresscor cover	05-887350	1	1	1	1	
71	Ball valve(5/8)	05-820630	1	1	1	1	
72	Flare nut(5/8)	38-890100	1	1	1	1	
74	8 Nut	38-817010	3	3	3	3	
75	8SP Washer	38-427080	3	3	3	3	
76	8 Washer	38-490740	3	3	3	3	
77	Compressor	05-983920	1	-	-	-	※
		05-983790	-	1	-	-	※
		05-802470	-	-	1	-	※
		05-978150	-	-	-	1	※
78	Mount rubber	05-857570	4	4	4	4	
79	Distributor	05-884120	1	1	1	1	
79	Capillary tube	05-483000	5	5	5	5	
82	Valve stay	02-881200	1	1	1	1	
83	Strainer	05-984840	1	1	-	-	
		05-815080	-	-	1	1	
84	Service valve (2/8)	05-884470	1	1	-	-	
	Service valve (3/8)	05-884350	-	-	1	1	
85	Flare nut(2/8)	38-890070	1	1	-	-	
	Flare nut(3/8)	38-890080	-	-	1	1	
88	Crankcase heater	06-855410	1	1	1	1	※
89	Base compressor cover	02-880780	1	1	1	1	

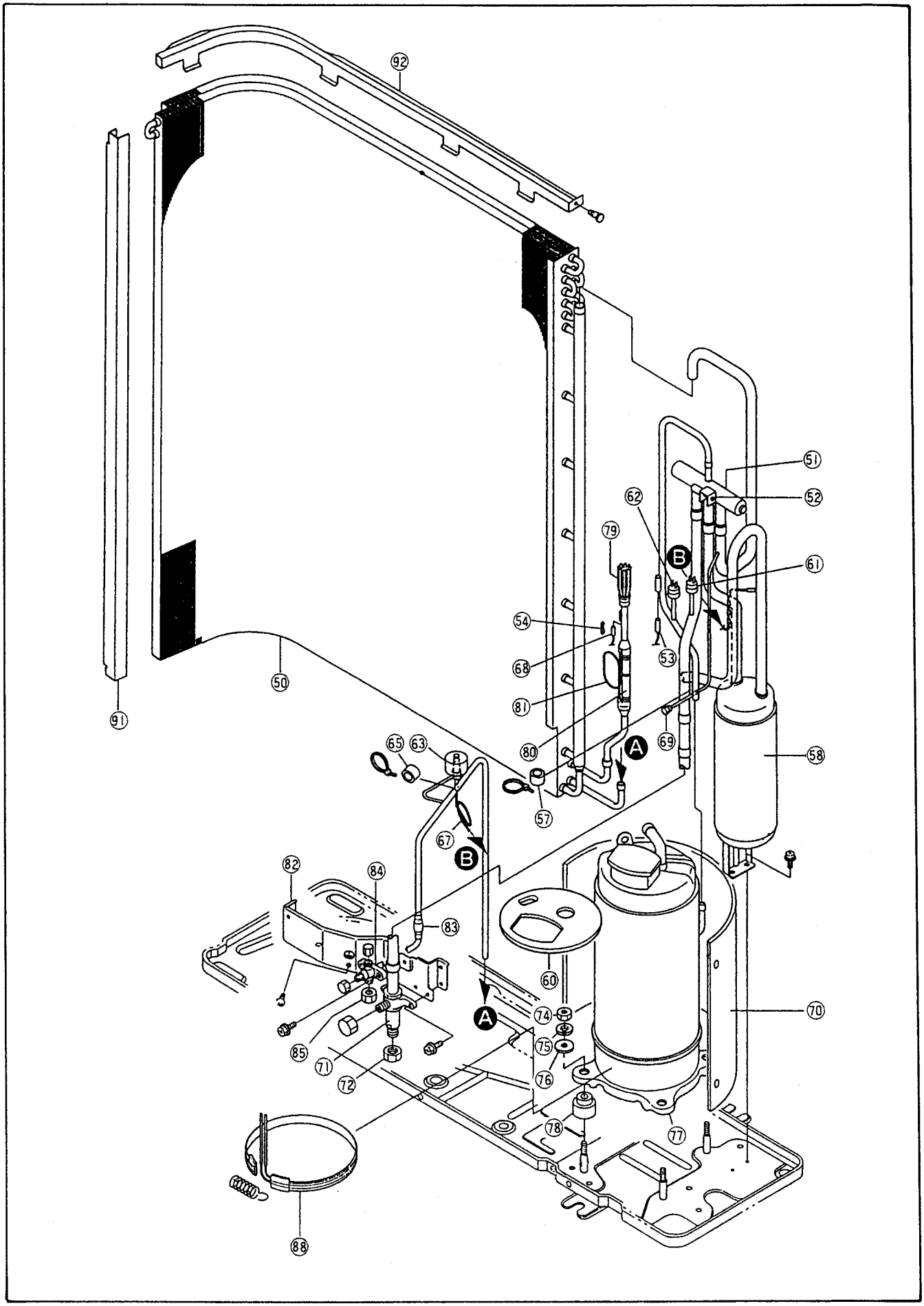
CU-112C52XP,CU-140C53XP,CU-160C53XP



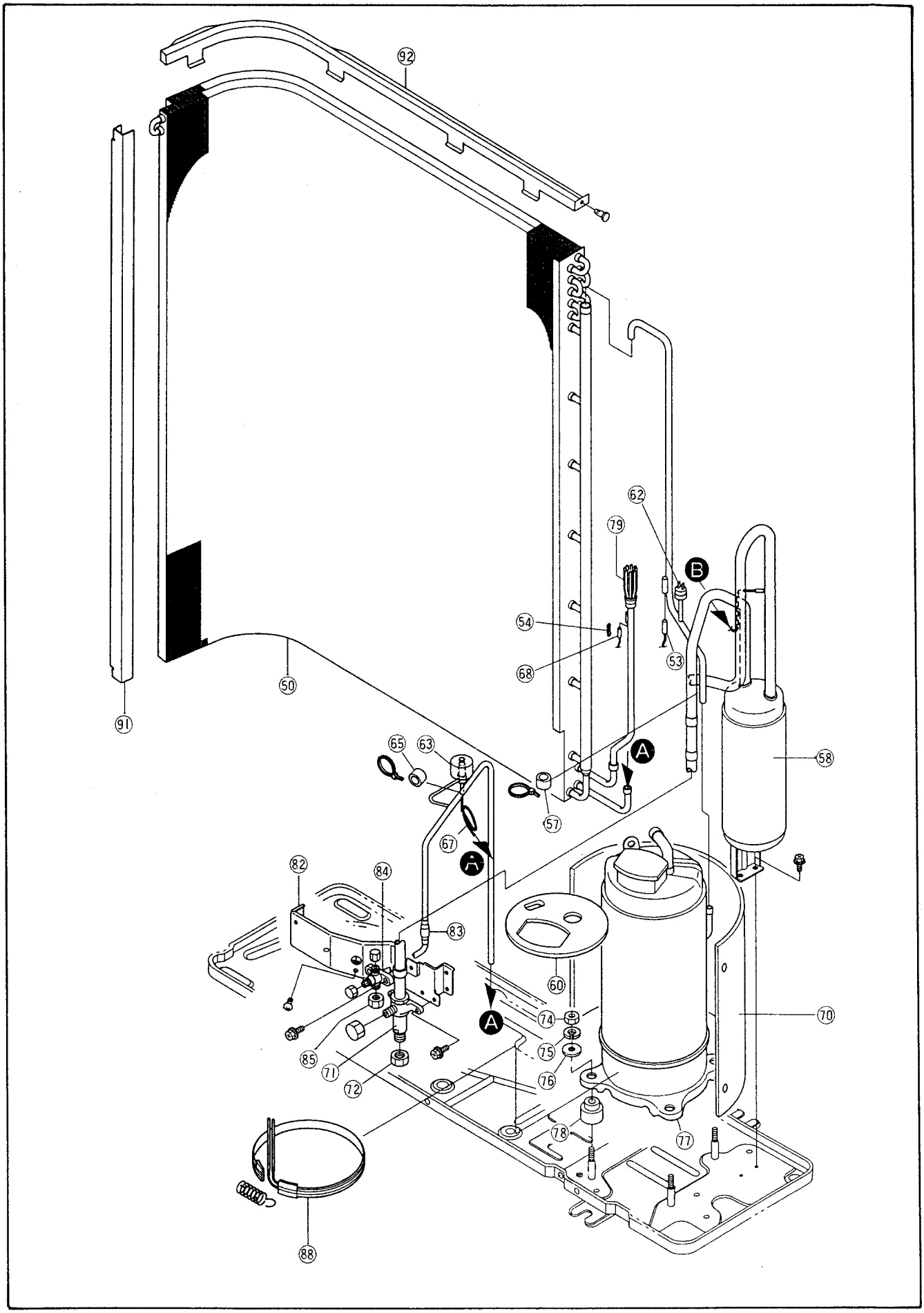
CU-112C52XP,CU-140C53XP,CU-160C53XP



CU-112C52XP,CU-140C53XP,CU-160C53XP(Heat pump model)



CU-112C02XP,CU-140C03XP,CU-160C03XP(Cooling only model)



Heat pump model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT			※REC PARTS
			112C52XP	140C53XP	160C53XP	
1	Condenser guard	02-879510	1	—	—	
		02-879900	—	1	1	
3	Top plate As	02-879340	1	—	—	
		02-879910	—	1	1	
5	Motor stay	02-879490	1	1	1	
6	Fan motor	06-855620	2	2	—	※
		06-855630	—	—	2	※
8	Prop fan	05-864390	2	2	2	
9	10 Nut	08-405150	2	2	2	
10	10 Sp washer	08-405160	2	2	2	
11	Washer for fan	06-962730	2	2	2	
13	Orifice ring	02-879410	2	2	2	
15	Qrifice plate	02-879500	1	—	—	
		02-879890	—	1	1	
16	Hanger shell(B)	02-879430	1	1	1	
17	Fan guard	42-574190	1	1	1	
18	Hanger shell(A)	02-879420	3	3	3	
20	Side panel	02-879480	1	1	1	
21	Front panel	02-879520	1	1	1	
22	Seal plate	02-881180	1	1	—	
		42-573500	—	—	1	
23	Pipe cover B	02-879370	1	1	1	
24	Pipe cover F	02-879360	1	1	1	
26	Unit base As	42-574050	1	—	—	
		42-573460	—	1	—	
		42-573470	—	—	1	
30	Control box	06-852690	1	1	1	※
31	CT board	06-855400	1	1	1	※
35	Transformer	06-855430	1	1	1	※
37	Electric capacity for fan motor	06-833100	2	2	2	
40	Terminal	06-855360	1	1	1	
42	Compressor relay	06-844690	1	1	1	※
		06-856400	—	1	1	
43	Compressor cord As	46-936330	1	—	—	
		46-931370	—	1	—	
		46-939060	—	—	1	
46	Printed circuit board	46-935900	1	—	—	※
		46-935920	—	1	—	
		46-939090	—	—	1	
50	Condenser&Distilbuter	45-906240	1	—	—	
		45-907490	—	1	—	
		45-907500	—	—	1	
51	Reversing valve	05-495730	1	—	—	※
		05-814560	—	1	1	※
52	Reversing valve coil	06-855900	1	1	1	※
53	Piping thermostcr(Discharge)	46-931350	1	1	1	※
54	Spring for sensor	05-840710	2	2	2	
57	Pipe holder rubber	05-867620	1	1	1	
58	Accumulator As	45-909310	1	—	—	
		45-907430	—	1	—	
		45-907560	—	—	1	
60	Compressor cover top	05-867920	1	—	—	
		05-864540	—	1	—	
		05-866360	—	—	1	
61	Pressure switch(Heating)	06-826230	1	1	1	※
62	High pressure switch	06-830840	1	1	1	※
63	Elecctric magnetic valve coil	06-855920	1	1	1	※
64	Pressur switch	06-845860	—	—	1	

Heat pump model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT			※REC PARTS
			112C52XP	140C53XP	160C53XP	
84	Electric magnetic valve	05-809320	1	1	1	※
65	Pipe holder rubber	05-867200	1	—	—	
		05-867140	—	1	1	
67	Capillary tube for valve	05-864490	1	—	—	
		05-866020	—	1	—	
		05-868030	—	—	1	
68	Piping thermistor(Coil)	46-931360	1	1	1	
69	Check joint	05-822330	1	1	1	※
70	Cmpressor cover	05-867910	1	—	—	
		05-865060	—	1	—	
		05-868260	—	—	1	
71	Ball valve(6/8)	05-865070	1	1	1	
72	Flare nut(6/8)	38-890110	1	1	1	
74	8 Nut with washer	06-405360	3	—	—	
		38-817010	—	3	—	
		08-405330	—	—	3	
77	Compressor	05-867360	1	—	—	※
		91-959010	—	1	—	※
		05-869190	—	—	1	※
78	Mount rubber	05-849460	4	—	—	
		05-864550	—	4	—	
		05-887180	—	—	3	
79	Distributor	05-864820	1	—	—	
		05-865740	—	1	1	
79	Capiiltary tube	05-864830	6	8	8	
80	Check valve	05-478500	1	—	—	
		05-465940	—	1	1	
81	Heating capillary tube	05-664870	1	—	—	
		05-865990	—	1	—	
		05-866000	—	—	1	
82	Valve stay	02-881170	1	—	—	
		02-679400	—	1	1	
83	Strainer	05-815080	1	—	1	
		05-864520	—	1	—	
64	Service valve(3/8)	05-868750	1	—	—	
		05-864350	—	1	1	
85	Flare nut(3/8)	38-890080	1	1	1	
88	Cranccase heater	06-855420	1	1	—	※
		06-855690	—	—	1	※
90	Drain elbo As	47-598250	1	1	1	
91	Coil seal plate	02-879460	1	1	1	
92	Coil spaoer	02-879530	1	—	—	
		02-679860	—	1	1	
93	Electric noise killer	06-814710	1	—	—	
94	Bonnet(3/8)	05-403050	—	1	1	
95	Bonnet(3/4)	05-412690	—	1	1	

Cooling only model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT			※REC PARTS
			112CO02XP	140CO03XP	160CO03XP	
84	Service valve(3/8)	05-868750	1	1	1	
		05-854350	—	1	1	
85	Flare nut(3/8)	38-890060	1	1	1	
88	Crankcase heater	06-855420	1	1	—	※
		08-655690	—	—	1	※
91	Coil seal plate	02-879460	1	1	1	
92	Coil spacer	02-879530	1	1	—	
		02-879860	—	—	1	
94	Low pressure switch	06-645860	—	—	1	
95	Bonnet(3/8)	05-403050	—	—	1	
96	Bonnet(3/4)	05-412690	—	—	1	

Cooling only model

REF.NO.	PARTS NAME	PARTS NUMBER CNR	QUANTITY PER 1 UNIT			※REC PARTS
			112C02XP	140C03XP	160C03XP	
1	Condenser guard	02-879510	1	-	-	
		02-879900	-	1	1	
3	Top plate As	02-679340	1	-	-	
		02-879910	-	1	1	
5	Motor stay	02-879490	1	1	1	
6	Fan motor	06-855620	2	2	-	※
		06-855630	-	-	2	※
8	Prop fan	05-864390	2	2	2	
9	10 Nut	08-405150	2	2	2	
10	10 Sp washer	08-405160	2	2	2	
11	Washer for fan	06-962730	2	2	2	
13	Orifice ring	02-879410	2	2	2	
15	Orifice plate	02-879500	1	-	-	
		02-879890	-	1	1	
16	Hanger shell(B)	02-879430	1	1	1	
17	Fan guard	42-574190	1	1	1	
18	Hanger shell(A)	02-879420	3	3	3	
20	Side panel	02-879480	1	1	1	
21	Front panel	02-879520	1	1	1	
22	Seal plate	02-881180	1	1	-	
		42-573500	-	-	1	
23	Pipe cover B	02-879370	1	1	1	
24	Pipe cover F	02-879360	1	1	1	
26	Unit base As	42-574050	1	-	-	
		42-573460	-	1	-	
		42-573470	-	-	1	
30	Control box	06-852690	1	1	1	
31	CT board	06-855400	1	1	1	※
35	Transformer	08-855430	1	1	1	※
37	Electric capacity for fan motor	06-833100	2	2	2	※
40	Terminal	06-855360	1	1	1	
42	Compressor relay	06-844690	1	-	-	※
		06-856400	-	1	1	
43	Compressor cord As	46-936300	1	1	1	
		46-931371	-	1	-	
		46-939060	-	-	1	
46	Printed circuit board	46-937260	1	-	-	※
		46-937420	-	1	-	
		46-939070	-	-	1	
50	Condenser&Distilbuter	45-906410	1	-	-	
50	Condenser	05-865960	-	1	1	
50	Distilbuter	45-907770	-	1	1	
53	Piping thermistor(Discharge)	46-931350	1	1	1	※
54	Spring for sensor	05-840710	2	2	2	
57	Pipe holder rubber	05-867620	1	1	1	
58	Accumulator As	45-909310	1	-	-	
		45-907430	-	1	-	
		45-907580	-	-	1	
60	Compressor cover top	05-867920	1	-	-	
		05-864540	-	1	-	
		05-866360	-	-	1	
62	High pressure switch	06-830840	1	1	1	※
63	Elecctric magnetic valve coil	06-855920	1	1	1	
65	Pipe holder rubber	06-867140	1	1	1	
67	Capillary tube for valve	05-884490	1	-	-	
		05-886020	-	1	-	
		05-866030	-	-	1	
68	Piping thermistor(Coil)	46-931360	1	1	1	※
70	Compressro oover	05-867910	1	-	-	
		05-865060	-	1	-	
		06-868260	-	-	1	
71	Ball valve(6/8)	05-865070	1	1	1	
72	Flare nut(6/8)	38-890110	1	1	1	
74	8 Nut	08-405360	3	3	3	
		38-817010	-	3	3	
77	Compressor	05-867360	1	-	-	※
		91-959010	-	1	-	※
		05-869190	-	-	1	※
78	Mount rubber	05-849460	4	-	-	
		05-864550	-	4	-	
		05-869190	-	-	1	
79	Distributor	05-864820	1	-	-	
		05-865740	-	1	1	
79	Capillary tube	05-864830	6	8	8	
82	Valve stay	02-881170	1	-	-	
		02-879400	-	1	1	
83	Strainer	05-815080	1	-	-	